Worcester Polytechnic Institute

Lighting System Submittals

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BARBIZON
LIGHTING COMPANY
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Worcester Polytechnic Institute ~ Dimming and Distrubution Package
SUBMITTAL DATA SHEETS - TABLE OF CONTENTS

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7 - 8	36	Dual 20A Dimmer Module (72 "stage" dimmers)
7 - 8	2	Dual 20A Dimmer Module (4 "house" dimmers)
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9 - 12	1	Control Electronics Module (CEM+)
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N/A		**14" Flat Screen LCD Monitor**
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N/A	1	**25' DMX Control Cable (M-F 5-pin XLR)**
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Section III - Architectural Controls		
28 - 31		**ETC Unison External Processing Rack w/ CME Control Module**
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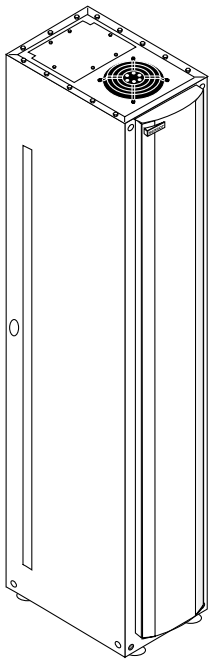
32 - 33	2	**ETC Unison Control Station** with two buttons. *Entry / Panic Station - - 1 @ Main Entry Door, 1 @ Steps*
	1	**ETC Unison Control Station** with 10 -preset buttons. *"Master Station" w/ record - - Control Booth*
Section IV - Power Distribution		
34	12	**Pipe Mounted Outlet Box** with 6- 2P&G outlets, wired up to 6-20A circuits
		NOTE: **Plugging boxes will be labeled sequentially "1" through "72" and furnished with U-Bolt kit oriented to mount *above* the pipe grid. Grid placement by owner.**
Section V - Fixtures and Accessories		
35 - 36	20	**ETC 36° Source Four Ellipsoidal** with c-clamp, color frame, safety cable , 575 Watt lamp and 20A 2P&G connector.
37 - 38	40	**ETC 50° Source Four Ellipsoidal** with c-clamp, color frame, safety cable. 575 Watt lamp and 20A 2P&G connector.
39 - 40	30	**Altman 6" Fresnel** with c-clamp, color frame, safety cable, 750 watt lamp and 20A 2P&G connector.
41	10	City Theatrical B-size Pattern Holder - Sandwich Style for Source 4
Section VI - Pipe Grid Materials		
N/A	1239	**1.5" Schedule 40 pipe -** 59 -21' lengthes, cleaned and primed
N/A	34	**34 - spice pipes, cut to 18" length**
42	15	**Wall Flange**
43	90	**Over-Lap Bracket**



GENERAL INFORMATION

Sensor+ dimming systems provide high density, professional features and exceptional reliability for lighting applications that require the best the entertainment industry can offer.

APPLICATIONS

- Professional and educational theatre
- Production studios
- Concert and performance halls
- Themed retail and dining
- Multi-use Convention Centers
- Houses of Worship

FEATURES

- High dimmer density
- Up to two 2.4kW dimmers per module
- 6, 12, 24, and 48 module racks available
- Rugged industrial construction
- Installation flexibility
- Adaptable modular design
- 100,000 AIC Rating
- Advanced configuration editing built into rack
- Stores up to 128 Presets in memory
- Direct Ethernet control signal input
- Two DMX512 inputs
- Standard system and rack monitoring with diagnostic reporting
- Supports ETC Dimmer Doubling™
- All racks UL and cUL Listed

ACCESSORIES

- Sensor Preset Station
- Dimmer Doubler™
- Sound Suppression Hood
- Floor pedestal for 24-module rack
- Document holder

ORDERING INFORMATION

Installation Racks

Model#	Description
SR6+	Sensor+ 6 Module Rack
SR12+	Sensor+ 12 Module Rack
SR24+	Sensor+ 24 Module Rack
SR48+	Sensor+ 48 Module Rack
SR6+1P	Sensor+ 6 Module Single Phase Rack
SR12+1P	Sensor+ 12 Module Single Phase Rack
SR24+1P	Sensor+ 24 Module Single Phase Rack

Rack Options*

Model#	Description
AT12	Amp-Trap® fuse option for 12-module rack
AT24	Amp-Trap® fuse option for 24-module rack
AT48	Amp-Trap® fuse option for 48-module rack
BK12	Bussing kit for 2 - 12-module racks
BK24	Bussing kit for 2 - 24-module racks
BK48	Bussing kit for 2 - 48-module racks
AUX19-12	19" Auxiliary Rack(s) for 12-module rack
AUX19-24	19" Auxiliary Rack(s) for 24-module rack
AUX12-48	12" Auxiliary Rack(s) for 48-module rack
AUX19-48	19" Auxiliary Rack(s) for 48-module rack
AUX30-48	30" Auxiliary Rack(s) for 48-module rack

*Vibration Reduction mounts available for all Sensor+ rack.
Contact ETC for details

Rack Accessories

Model#	Description
SBOX	Sensor+ Preset Station
DD	Dimmer Doubler without input connector
DD-B	Dimmer Doubler with Stage Pin input connector
DD-C	Dimmer Doubler with Twist-loc® input connector
SSSh 6-12	Sensor+ Sound Suppression Hood - small
SSSh 24-48	Sensor+ Sound Suppression Hood - large
Pedestal	Floor pedestal for 24-module rack
DH	Document holder

SPECIFICATIONS

GENERAL

Racks available in four sizes

- **SR6+ 6 modules, 12 dimmers maximum**
- **SR12+ 12 modules, 24 dimmers maximum**
- **SR24+ 24 modules, 48 dimmers maximum**
- **SR48+ 48 modules, 96 dimmers maximum**

Dual density (two dimmers per module), single density and half density dimmer modules available

Operating temperature: 0-40°C / 32-104°F

Dimmer room HVAC systems must at all times maintain the specified ambient temperature at the dimmer rack. Dimming systems operating within 10 degrees F of the upper or lower temperature limits must strictly follow installation and operation guidelines to operate reliably.

Relative humidity: 30-90% non-condensing

All racks UL and cUL Listed

MECHANICAL

Rugged 16-gauge steel construction

Fine-textured, scratch-resistant, epoxy paint

SR6+ and SR12+ uses wall mount installation

SR24+ can be wall or pedestal mounted

SR48+ is floor mounted

Top and bottom conduit access through removable panels (SR48+) or knockouts (SR6+, SR12+, and SR24+)

No tools required for module removal or installation

Keyed module slots prevent insertion of inappropriate module types

Front access to all wiring and terminations

Full height locking door

Electrostatic air filter easily removed from door for periodic cleaning

High efficiency cooling system with airflow sensor

High visibility LED status beacon

ELECTRICAL

SR6+, SR12+ and SR24+ accept:
Three phase 120/208 VAC
Single phase 120/240 VAC

SR48+ accepts
Three phase 120/208 VAC

Line feed frequencies from 47-63Hz

Line feed voltage range is 90-140 VAC

Load terminals accept up to #4 AWG (16mm2) wire (see chart)

100,000 AIC rack rating

Auxiliary Equipment Racks and custom switchgear/distribution available (Call ETC for details)

CONTROL ELECTRONICS

Sensor+ Control Electronics Module (CEM+)

Single Ethernet control signal input

Two DMX512 inputs

Standard diagnostic reporting

Supports Dimmer Doubling™

OPTIONS

Advanced Features™ dimmer-specific load and diagnostic reporting

Amp-Trap® fuses to allow feeding individual racks from oversize mains

All-copper bus kits available

Auxiliary Racks

Vibration reduction kits available for all racks

ORDERING INFORMATION

Dimmer Modules

Model#	Description
Standard Sensor Modules	
D15	Dual 15A Dimmer Module - 350µS
D20	Dual 20A Dimmer Module - 350µS
D15E	Dual 15A Dimmer Module - 500µS
D20E	Dual 20A Dimmer Module - 500µS
D50AF	Single 50A Dimmer Module - 500µS - Advanced Features
D100AF*	Half 100A Dimmer Module - 500µS - Advanced Features
Special Purpose Sensor Modules	
L10	Dual 10A Low Wattage Dimmer Module
L10F	Single 10A Low Wattage Fluorescent Dimmer Module
D15F	Single 15A Fluorescent Dimmer Module
D20F	Single 20A Fluorescent Dimmer Module
R15AF	Dual 15A Relay Module - Advanced Features
R20AF	Dual 20A Relay Module - Advanced Features
CC15	Dual 15A Constant Circuit Breaker Module
CC20	Dual 20A Constant Circuit Breaker Module
AFM	Air Flow Module

* Half-density modules use two module slots

Control Modules

Model#	Description
CEM+	Control Electronics Module +

WIRING CHARTS

Load Wiring Lug Capacity

Connection	Wire Size
10A, 15A, 20A, and 50A lugs	4 AWG Max. (16mm^2)
100A lugs	2/0 Max.

Primary Feed Lug Capacity

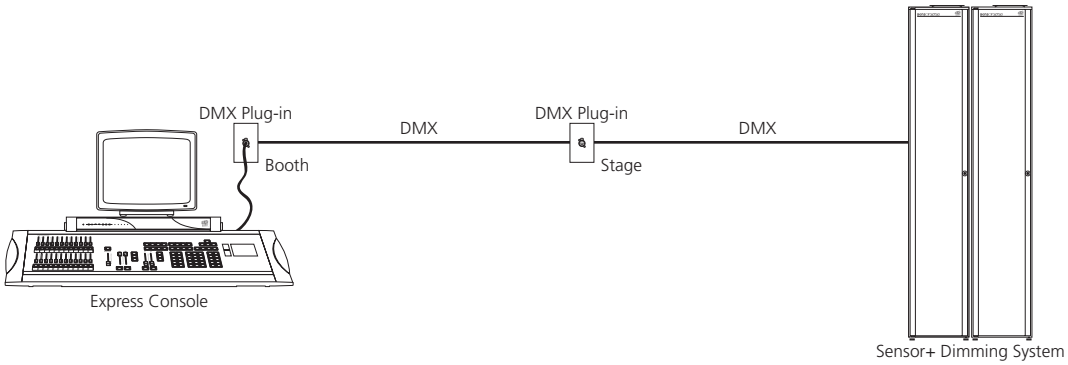
Connection	Wire Size
SR6+	Single 2/0 - 14 AWG
SR12+	Dual 250 kcmil – 6 AWG
SR24+	Dual 350 kcmil – 4 AWG
SR48+	Dual 600 kcmil – 2 AWG

RACK DIMENSIONS

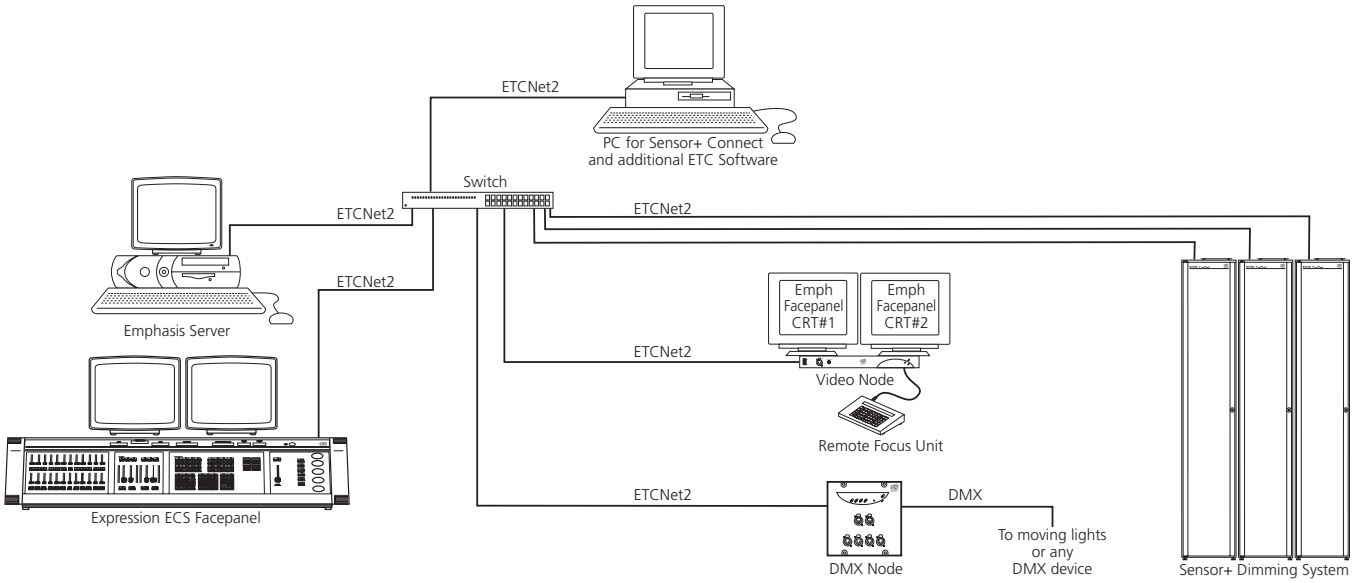
Installation Rack dimensions

Model	Height		Width		Depth	
	inches	cm	inches	cm	inches	cm
SR6+	16.4	42	14.6	37	13.3	34
SR12+	25.8	66	14.6	37	13.3	34
SR24+	45.8	116	14.6	37	16.8	43
SR48+	83.1	211	14.6	37	22.8	58

TYPICAL DMX SYSTEM RISER DIAGRAM



TYPICAL NETWORK SYSTEM RISER DIAGRAM



PHYSICAL

Empty Dimmer Rack Weights

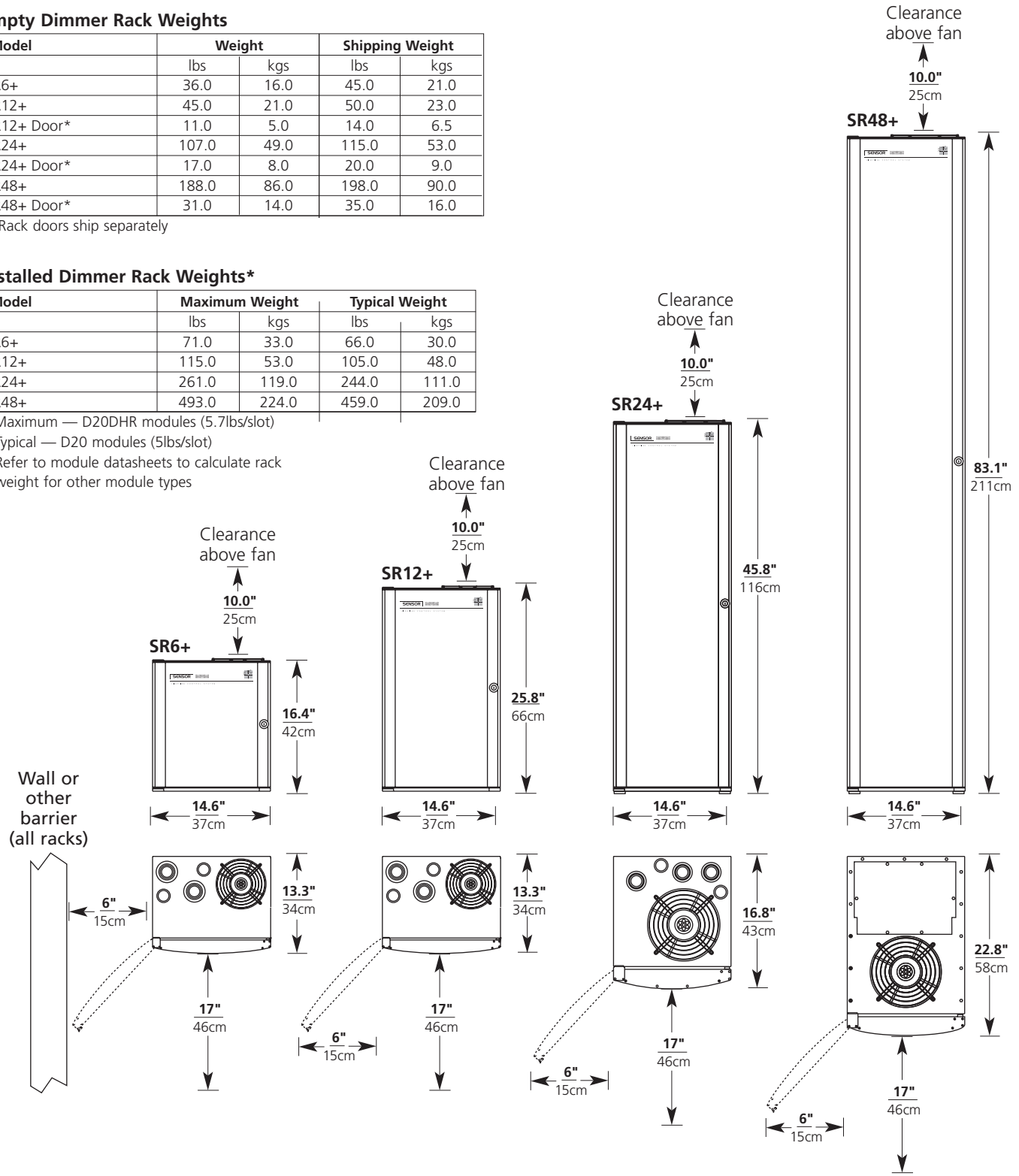
Model	Weight		Shipping Weight	
	lbs	kgs	lbs	kgs
SR6+	36.0	16.0	45.0	21.0
SR12+	45.0	21.0	50.0	23.0
SR12+ Door*	11.0	5.0	14.0	6.5
SR24+	107.0	49.0	115.0	53.0
SR24+ Door*	17.0	8.0	20.0	9.0
SR48+	188.0	86.0	198.0	90.0
SR48+ Door*	31.0	14.0	35.0	16.0

*Rack doors ship separately

Installed Dimmer Rack Weights*

Model	Maximum Weight		Typical Weight	
	lbs	kgs	lbs	kgs
SR6+	71.0	33.0	66.0	30.0
SR12+	115.0	53.0	105.0	48.0
SR24+	261.0	119.0	244.0	111.0
SR48+	493.0	224.0	459.0	209.0

*Maximum — D20DHR modules (5.7lbs/slot)
Typical — D20 modules (5lbs/slot)
Refer to module datasheets to calculate rack weight for other module types



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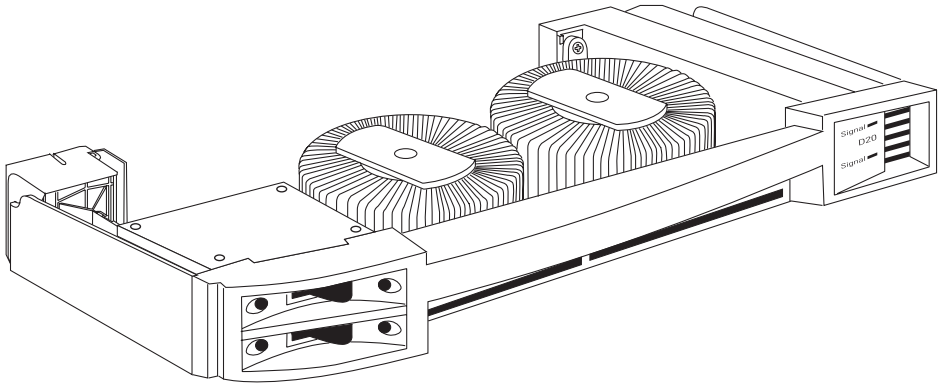
15-20 Amp Dimmer Modules

Standard Dimmer Series



GENERAL INFORMATION

D15 and D20 modules provide cost-effective digital phase angle dimming for standard incandescent fixtures.

APPLICATIONS
All Sensor® Installation Racks (except Delta)
All Sensor Touring Racks
All Sensor Portable Packs

FEATURES
Two 1.8 or 2.4kW dimmers per module
350µS risetime toroidal filters standard version
500µS risetime toroidal filters enhanced version
Die-cast aluminum chassis
Tool-free installation and removal
Dual back-to-back SCRs for each circuit
Fully magnetic circuit breakers
100% duty cycle at full rating
Breakers will not derate over product life cycle
100k AIC rating
UL and cUL listed

ORDERING INFORMATION

Standard Sensor Dimmer Modules

Model#	Description
D15	Dual 15 amp Dimmer Module with 350µS chokes
D20	Dual 20 amp Dimmer Module with 350µS chokes
D15E	Dual 15 amp Dimmer Module with 500µS chokes
D20E	Dual 20 amp Dimmer Module with 500µS chokes

Compatible Systems

Model#	Description
Sensor Dimming Racks	
SR6	6 slot Installation Rack(s)
SR12	12 slot Installation Rack(s)
SR24	24 slot Installation Rack(s)
SR48	48 slot Installation Rack(s)
Sensor Portable Packs	
SP6	6 slot Portable Pack with MPE module
SP12	12 slot Portable Pack with MPE module
Sensor Touring Racks	
SP24	24 slot Touring Rack
SP36	36 slot Touring Rack
SP48	48 slot Touring Rack

SPECIFICATIONS

DIMMER MODULES
Dimmers are UL and cUL listed for continuous duty at 100% of rated load
D15 – 1.8kW
D20 – 2.4kW
Dimmer modules are plug-in, and may be replaced without tools
Cast aluminum chassis, finished with textured epoxy paint
Includes circuit breaker(s), toroidal filter(s), SCR modules, power and control connectors
Keyed to prevent insertion in inappropriately rated rack positions

CIRCUIT BREAKERS
Fully magnetic to eliminate nuisance tripping
20x inrush current rating
125%, 10-120 seconds, must- trip rating
Rated for 100% switching duty applications

SCR ASSEMBLY
Sealed, patented assembly
Field replaceable with screwdriver
Two back-to-back SCRs per circuit
One Control LED per circuit
4000V isolation between control and power components
Integral bonded heatsink
Integral temperature sensor

CHOKES
High quality 350µS, risetime* toroidal filters
500µS risetime* filters in the Enhanced version

ELECTRICAL RATINGS
100k AIC rating
Hot-patching: dimmers shall withstand hot-patching of cold incandescent loads up to the dimmer's full rating, without tripping
Rated for continuous operation at full load

*Risetime measured at full load, at worst case firing angle (about 50%), from 10-90% of output wave form

PHYSICAL

Module Weights

Model#	Weight		Shipping Weight	
	lbs	kgs	lbs	kgs
D15/20	5	2.3	6.9	3.1
D15E/D20E	5	2.3	6.9	3.1

Maximum BTU Production per module

Model#	BTUs	Watts	Efficiency
D15	380	112	96.9%
D20	522	154	96.8%
D15E	474	140	96.1%
D20E	810	238	95.0%

These values should be provided to a qualified HVAC design engineer, along with dimmer quantities, types and dimmer room dimensions, to calculate dimmer room air handling requirements.

Dimmer room HVAC systems must at all times maintain the specified ambient temperature **at the dimmer rack**. Dimming systems operating within 10°F of the upper or lower temperature limits must strictly follow installation and operation guidelines to operate reliably.

SCR Rating

Module	15/20 amp
Single cycle peak surge current	625 amp
Half cycle peak surge current	1620 amp
Transient over voltage	600V

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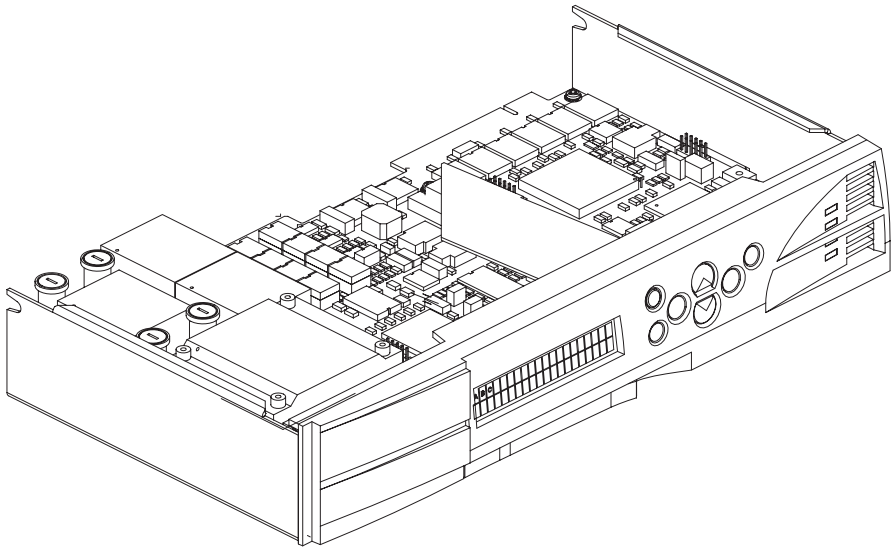
Sensor® products protected by U.S. Patent Numbers: 5,323,088, 5,352,958, and 6,002,563 European Number: 0603333 German Number: 69203609, US and International Patents Pending

CEM+ Control Module

Sensor®+ Series



GENERAL INFORMATION

The Sensor+ Control Electronics Module (CEM+) receives and manages Ethernet control signals as well as two DMX512 inputs. It controls dimmer output, and communicates feedback information to compatible lighting control devices and network peripherals.

APPLICATIONS
- Professional and educational theatre
- Production studios
- Performance halls
- Retail and dining
- Houses of worship
- High density architectural dimming
- Touring and Portable dimming

FEATURES
- Direct Ethernet connectivity for dimmer levels, feedback and system control
- Two DMX512 input connections
- Rugged industrial construction
- Modular design
- Local Menu-driven User Interface
- Advanced configuration editing
- 128 Presets with programmable fade times
- System and rack feedback standard
- Support for Advanced Features (AF) dimmer-specific reporting
- Supports ETC Dimmer Doubling™
- UL and cUL LISTED and CE Marked

ACCESSORIES
- Sensor+ Connect – a browser-based Graphical User Interface - accessible thru an Emphasis server, computer, or a PDA on the network
- Sensor+ Preset Stations
- Retrofit kits to upgrade existing Sensor racks to CEM+ modules

ORDERING INFORMATION

Control Modules

Sensor+ Control Electronics Module	
Model#	**Description**
CEM+	Control Electronics Module

Compatible Systems

Sensor+ Installation Racks	
Model#	**Description**
SR6+	Sensor+ 6 module rack
SR12+	Sensor+ 12 module rack
SR24+	Sensor+ 24 module rack
SR48+	Sensor+ 48 module rack
SR6AF+	Sensor+ 6 module Advanced Features rack
SR12AF+	Sensor+ 12 module Advanced Features rack
SR24AF+	Sensor+ 24 module Advanced Features rack
SR48AF+	Sensor+ 48 module Advanced Features rack
HSR+/HSRAF+	Sensor+ 230V racks
SRAFN+	Sensor GFCI racks
SRD2+	Sensor Delta racks
ESRAFN+	Sensor CE racks
Sensor+ Touring Racks	
Model#	**Description**
SP4820+	Sensor+ 24 module Touring Rack (48- 20A dimmers)
SP7220+	Sensor+ 36 module Touring Rack (72- 20A dimmers)
SP9620+	Sensor+ 48 module Touring Rack (96- 20A dimmers)
Accessories	
Model#	**Description**
SBOX	Sensor+ Preset Stations
RK	CEM to CEM+ Retrofit kit for standard Sensor racks
RK-AF	CEM to CEM+ Retrofit kit for Sensor AF racks

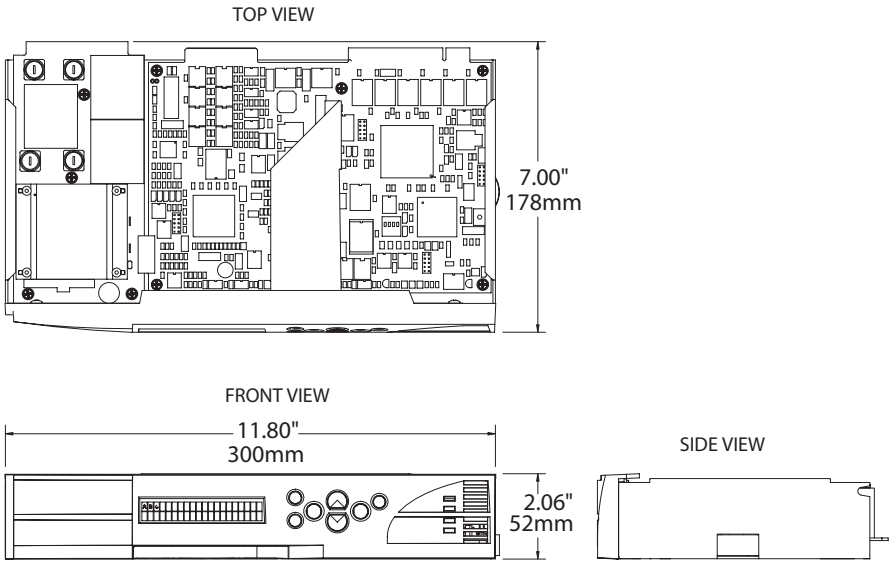
SPECIFICATIONS

GENERAL	Universal Control Electronics Module
	Direct Ethernet connectivity for dimmer levels, feedback and system control
	UL, cUL LISTED and CE Marked
PHYSICAL	Formed steel body finished with textured epoxy paint
	Injection molded face panel
	Slide-in module installs and removes without tools
	Spring-loaded module release
	Airflow sensor to ensure adequate airflow
ELECTRICAL	Accepts: Single phase Three phase WYE or Delta
	Universal Voltage range 90-250 VAC
	Line feed frequencies from 47-63Hz
	Automatic frequency variation compensation
CONTROL FEATURES	2-line by 20-character backlit LCD for system configuration, status display and error indication
	Backlit 7-button keypad includes Reset button
	4 status LED indicators: Power, Network activity, DMX-A and DMX-B
	Two configurable DMX512 inputs (2500V opto-isolated)
	128 user-programmable presets assignable to 4 rooms
	Maximum of 1024 racks (64 groups of 16)
	Single Panic circuit with flexible programming
	Complete group configuration stored in each CEM+
	Individual CEM+ failure does not disable multi-rack group
	Replacement CEM+ can download configuration from adjacent racks, rack back plane or online server
	Multi-rack configuration can be restored from a single CEM+
	Dimmer outputs are regulated to maintain constant power to loads ± 1V
	Individual output scale voltage settings for load wiring compensation (60 – 140V)
	Selectable Dimmer Modes Normal Dimmer Doubled Switched (unregulated on/off with adjustable threshold) Fluorescent with adjustable threshold Always On Off
	Selectable Dimmer Output Curves Linear Modified Linear Square Modified Square Sensor 2.0
	40,000-Step Resolution per half cycle
	Response speed <25mS
	Selectable Data Loss Behavior
FEEDBACK	All Sensor racks with CEM+s include basic system diagnostic reporting
	Remote monitoring, programming and backup functions over the network using Sensor+ Connect or WYSILink software program
	Standard rack feedback includes: DMX input status, Rack power status, and Rack temperature
	Advanced Features (AF) provides dimmer specific status and load feedback (requires AF dimmer rack and AF dimmer modules)

LOCAL PROGRAMMING MENU

RACK ERRORS	View Error messages
ABOUT	About Group: Software version, panic status, preset status, and group name
	About Network: IP address, SubNet mask and Gateway
	About Rack General: ambient temperature and airflow, rack type, and air filter status
	About Rack Power: frequency, voltage per phase, and voltage headroom
	About Rack Data: status for DMXA, DMXB, and Network activity
	About Rack Address: DMXA, DMXB or EDMX start address, Rack Address mode (Standard or Advanced)
	About Dimmer: module type, curve, scale voltage, output level, control source, and module location
	About Room: assign and monitor presets in a room
	Identify Rack: quick way to find and identify a single rack in a group
LOGIN	Security Level passwords determine screens and modes available to user
PRESETS	Play, deactivate or clear presets
	Record presets from DMX, EDMX and set levels
	Set fade times and priority levels
	Name presets and rooms
	Set maximum number of active presets per room
PANIC	Activate, deactivate or clear group-wide panic
	Record panic from DMX, EDMX and set levels
	Record panic properties: normally open or closed, maintained or momentary, master level, and option to force all non-panic dimmers to zero
DIMMERS	Set dimmers at levels and release
	Set dimmer curve
	Name the dimmer
RACK SETUP	Name rack and set type of rack
	Patch Capability
	Set first dimmer and address mode (standard or advanced)
	Set Temperature Alarm
	Set Power Balance – Column, Single Phase or Three Phase
	Set Air Filter Cleaning reminder based on hours of use
	Configure Fan as Always On or Off if no data/15 min.
	Select Data loss Behavior – Hold last Look, Wait and fade, Crossfade to a Preset
GROUP SETUP	Name Group
	Setup Group Network – IP Address, SubNet mask, Gateway Address and Enable/Disable Network
	Set Data Priority per DMX port
	Select Language – English, French, Spanish or German
	Select Temperature Reporting type - F° or C°
	Set Login Timeout
	Record Loads and Report Load Errors

DIMENSIONS



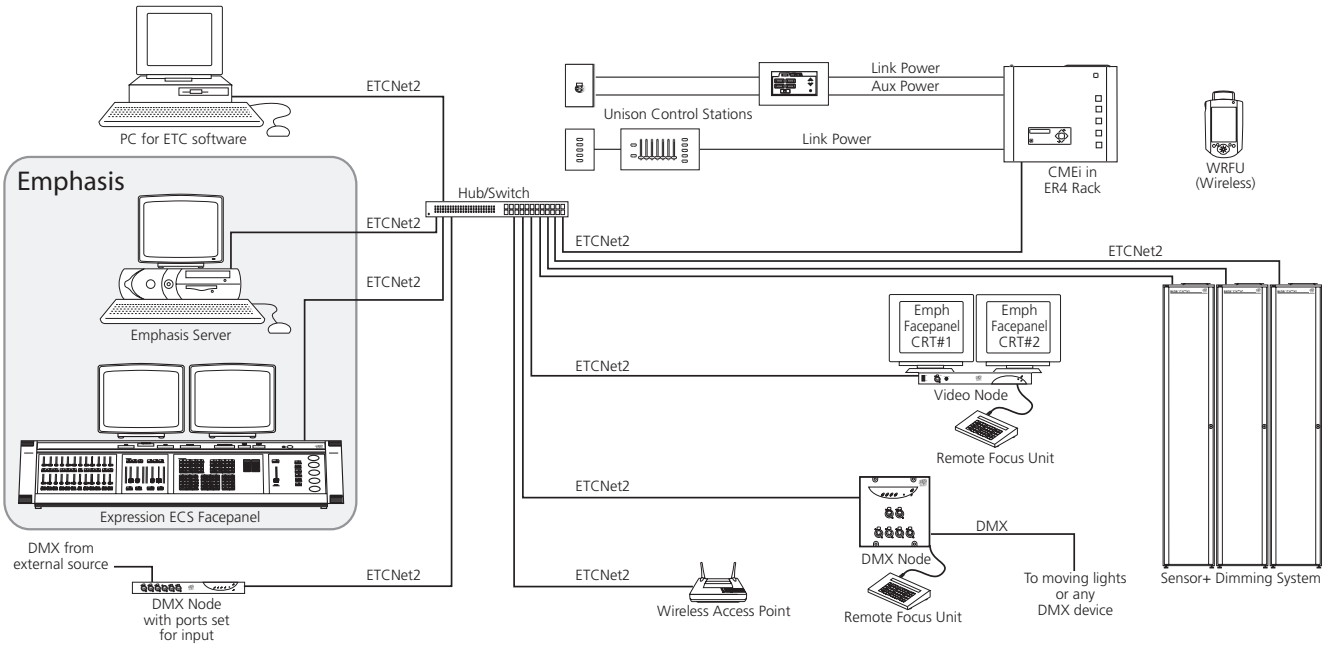
Control Electronic Module Weight

Model	Weight		Shipping Weight	
	lbs	kgs	lbs	kgs
CEM+	4.2	2	6.2	2.8

Maximum BTU Production per module

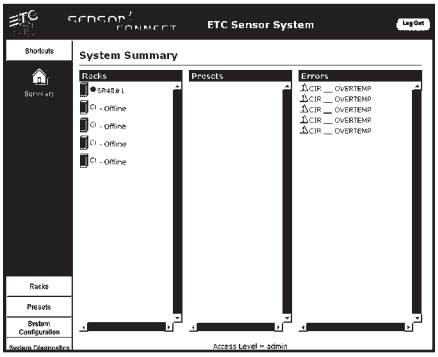
Model	BTUs	Watts	Efficiency
ALL CEM+	<10	<4	N/A

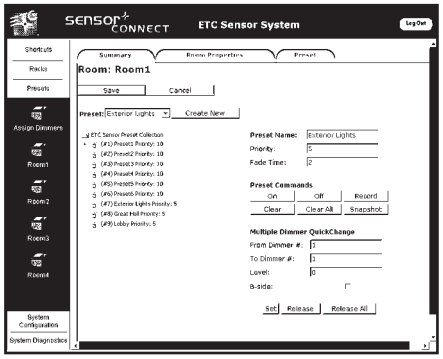
TYPICAL NETWORK SYSTEM RISER DIAGRAM

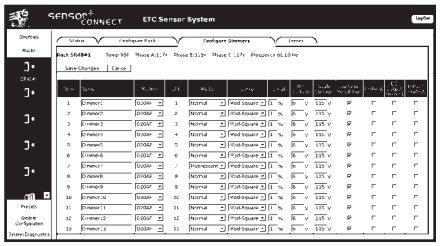


CEM+ Control Module

Sensor®+ Series







SENSOR+ CONNECT

Sensor+ Connect duplicates the functions of the Control Electronics Module (CEM+), but on your Emphasis server, computer or even your PDA. This graphical user interface (GUI) allows you to monitor rack activity, reconfigure dimmer curves, record or activate presets – plus a whole lot more.

Offers all the features needed to create, edit and download specific information to the racks and modules.

FEATURES
- Configure rack and module information
- Patch/Address 2 DMX Universes
- File transfer capabilities
- Record and activate 128 preset looks
- Assign presets to up to 4 rooms

SYSTEM REQUIREMENTS
- Emphasis server, Computer or PDA
- Internet Browser Software such as Internet Explorer 6.0 or better
- Network connection (wired or wireless) to a Sensor System with a CEM+ module

BROWSER NAVIGATION

LOGIN Security Level passwords determine screens and modes available to user

HOME System Summary – Rack status, Active Presets, Error List

RACKS
- Select a rack or all racks
- View rack status, rack configurations, dimmer configuration and rack specific errors
- Rack Configuration
  - Name rack and set type of rack
  - Set Address mode: standard or advanced
  - Set Temperature Alarm
  - Select Power Balance – Column, Single Phase or Three Phase
  - Configure Fan Time mode as Always On or Off if no data/15 min.
- Dimmer Search
  - Search for dimmer(s) by specifying a number of search criteria – quick dimmer configuration

DIMMER CONFIGURATION
- Set dimmer name and module type
- Set dimmer mode: Normal, Dimmer Doubled Switched, Fluorescent, Always On, Off
- Set dimmer curve: Linear, Modified Linear, Square, Modified Square and Sensor 2.0
- Set Scale Voltage and Threshold levels
- Select On/Off for Voltage Regulation, Preheat, DC Output Prevention, and Inrush Protection
- Set Temperature Reporting mode as F° or C°

PRESETS
- Assign Dimmers:
  - Assign dimmers to Rooms
- Room 1, 2, 3 or 4:
  - Play or deactivate presets
  - Record presets from DMX, EDMX and Set levels
  - Set fade times and priority levels
  - Set Room Properties – name and maximum number of active presets

PHYSICAL CONFIG
- Panic
  - Play or deactivate group-wide panic
  - Record and clear panic
  - Set panic properties: normally open or closed, maintained or momentary, master level, and option to force all non-panic dimmers to zero
- Patch
  - Patch Configuration includes: Port Enable, DMX Loss Behavior, Dimmer Number Start, Length, Priority, Fade and Hold Time.
- Network
  - Setup Group Network – IP Address, Netmask, Gateway Address and Enable/Disable Network
- File Transfer
  - Copy configuration files to a computer (download)
  - Send updated configuration files to CEM+ (upload)
- Load Management
  - Record Loads and Report Load Errors

DIAGNOSTICS
- Dimmer Check
  - Set a dimmer to a level, with easy dimmer advancement
- Dimmer Level
  - Set dimmer(s) to a specified intensity.

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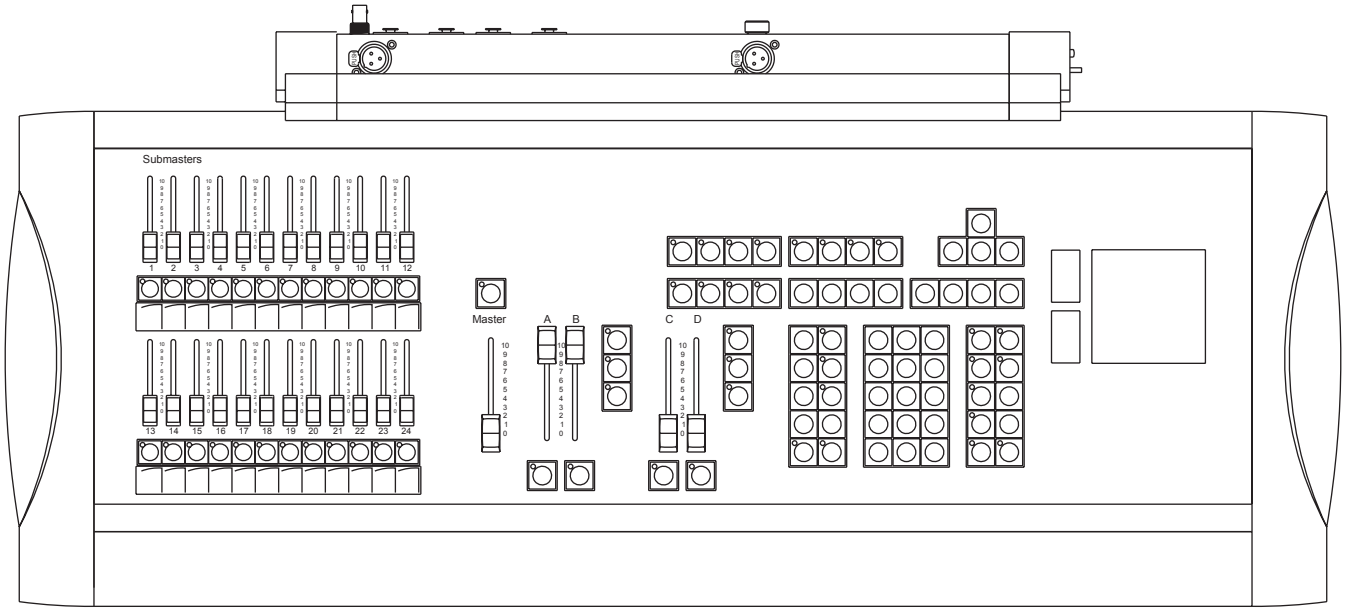


GENERAL INFORMATION

Foundational lighting control console with preset-style operation, Expression 3 compatibility, 125 or 250 channels.

APPLICATIONS
College
Middle/ High School
Community Theatre
Trade Show
Small TV Studio
Church

FEATURES
Preset style operation
125 or 250 channels
1024 DMX outputs
600 Cues
500 Groups
2000 Macros
10 pages of 24 Submasters
Two scene preset or preprogrammed operation
Preset Focus points
Moving Light controls
LTP (Latest Takes Precedence) Channels
Spreadsheet Editing
Ethernet for DMX, Video and other signal distribution
MIDI, MIDI Show Control and MIDI Time Code interface
Supports ETCLink Dimmer feedback

ACCESSORIES
Video Node
DMX Node
Remote Focus Unit (RFU)
Gooseneck Lamps
Expression Offline
Expression Offline for Windows
Express LPC

ORDERING INFORMATION

Express

Model#	Description
EXPS 125	Express 125
EXPS 250	Express 250
LPC/250	Express 250 Channel LPC

Express Accessories

Model#	Description
DNODE-RF	DMX Node - rack mount front entry
DNODE-RB	DMX Node - rack mount rear entry
DNODE-W	DMX Node - wallbox mount
VNODE-R	Video Node
RFU	Remote Focus Unit
M218	VGA Color Monitor
M219	LCD Flat Screen Display
4000A4003	Monitor Dust Cover for M218
M715	Littlelite Work Light
M604	Parallel Printer
EOL	Expression Offline

Other Consoles in Express Family

Model#	Description
EXPS 24/48	Express 24/48
EXPS 48/96	Express 48/96
EXPS 72/144	Express 72/144
LPC/96	Express 96 Channel LPC
LPC/192	Express 192 Channel LPC

SPECIFICATIONS

GENERAL
125 or 250 channels
1,024 DMX512 dimmers
600 cues
500 groups
99 focus points
Effects with up to 100 steps each
2,000 macros
24 submasters x 10 pages
2 timed/manual fader pairs
Diskette drive
Single VGA output
Printer port
UL, cUL, CE listed

DISPLAY FUNCTIONS
(Requires VGA monitor)
Cue List
Stage
Blind
Fader status
Spreadsheets and Lists
Cue, Sub, Group and Focus point views
Patch
Proportional levels
32 user–definable profiles
Dimmer Doubling capability (see Dimmer Doubling data sheet)
Setup
Flexichannel (displays only used channels)

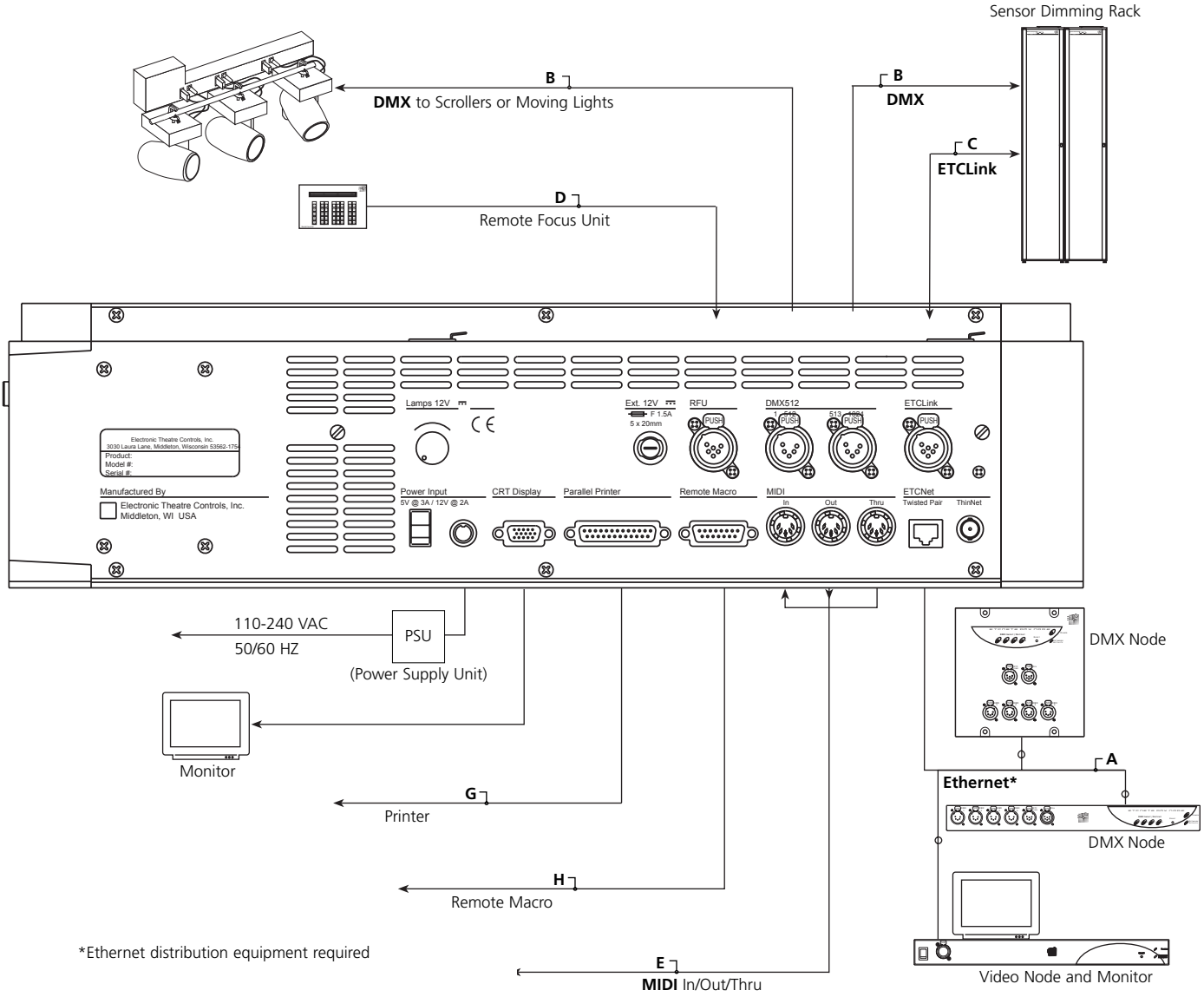
PLAYBACK CONTROLS
Faders
2 Timed/manual fader pairs with Go, Hold, Rate, Clear, and Back buttons
Individual last action fade capability for every channel
Trackpad
Master slider
Blackout button
Submasters
24 submasters (times 10 pages) with bump buttons and integral LEDs

OPTIONAL EQUIPMENT
DMX Node
ETCNet 2 device with remote DMX output, RFU
Video Node
ETCNet 2 device with keyboard, RFU, VGA, Printer ports, Serial
Remote Focus Unit
Hand held device with a keypad and LCD screen accesses most system functions for local adjustments and show editing
Expression Off-Line
Available for free download from ETC via www.etcconnect.com
Parallel Printer
VGA Monitor

INTERFACES
DMX512 Outputs (2)
Ethernet
ETCLink
MIDI
MIDI Show Control
MIDI Time Code
Remote Macro/Go
Remote Trigger
Remote Focus Unit (RFU)

CONTROL KEYPAD FEATURES
Cue attributes
Cues from .1 to 999.9
Split up/down fade times
Wait times
Follow time
Link to cue or macro
Modified rate
8-part multipart cues
Selective cue recording
Channel Functions
Lists constructed with +, –, Except, And, Thru
Sneak sets channel to discrete or fader level in default/specified time.
Only and Except features for group and channel manipulation.
Channel Attribute Display
Independent channel capability
Last Action Channels
X/Y Link List
Moving Light Functions
100 Focus point
16–bit fade resolution
Pop–up displays
ML Patch
Group Functions
500 groups with labels
Any cue or submaster may be accessed as a group
Submaster Functions
10 pages of 24 submasters with labels, timing and rate attributes
Bump buttons may be enabled, disabled or solo
Range editing of submaster attributes in submaster list
Submasters may be individually changed between pile-on and inhibitive
Effect Functions
100 steps each
Step times
In/Dwell/Out step times
High/Low levels
In/Dwell/Out effect times
Effects may be recorded as cues and loaded to submasters.
Range editing of effect step values and attributes
Live effects recording
Macros
2,000 macros
Macros may activate any button on the console
Live Learn mode
Blind editing
Astronomical Time Clock
Program up to 500 events
Play back according, day of week, time of day or in reference to time before/after sunrise or sunset

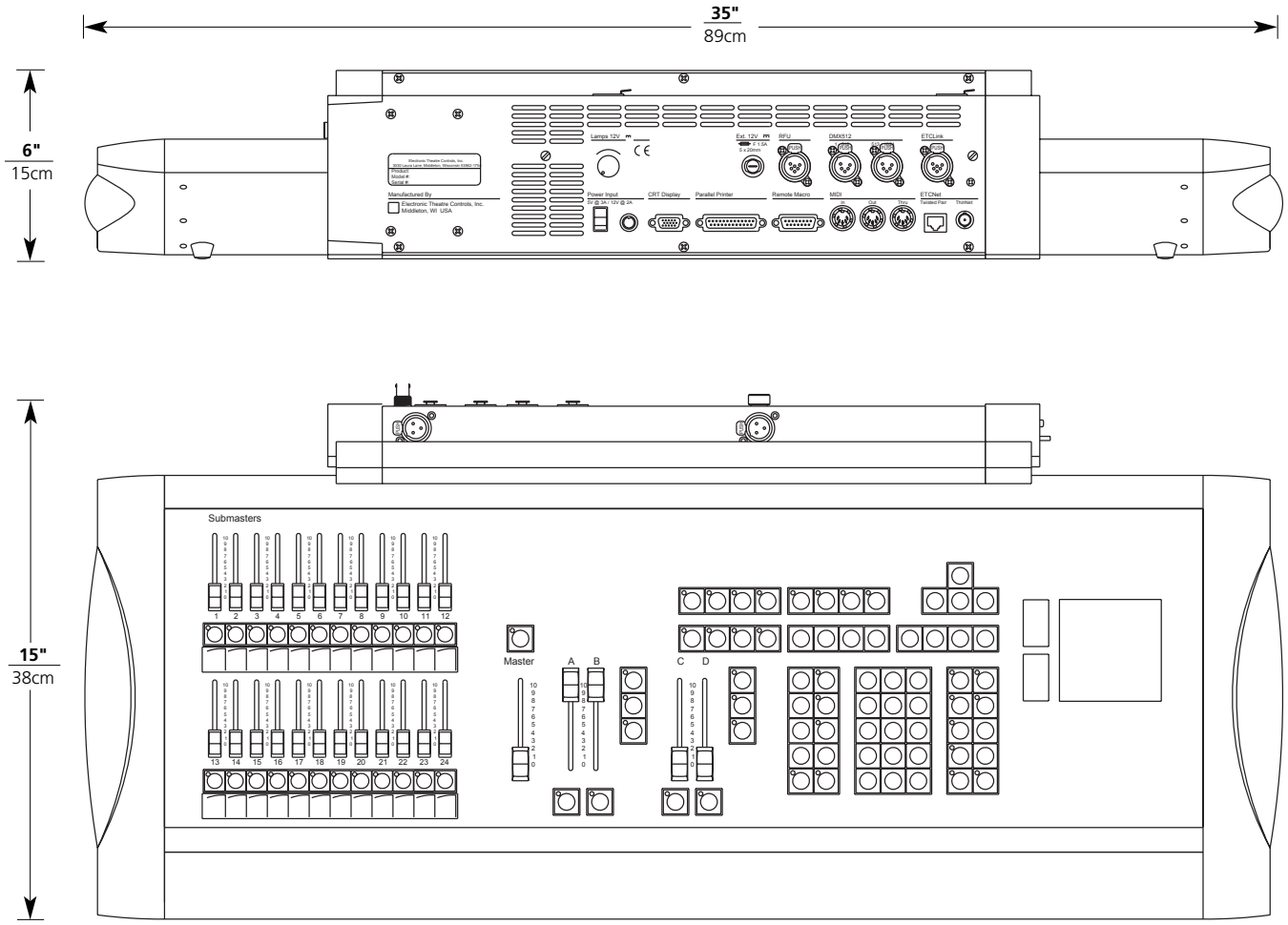
CONSOLE CONNECTIONS



Wire Types for Express consoles with....

Device	Wire Type	
Sensor Racks	**DMX** (XLR5) (1) Belden 9729 **ETCLink** (XLR6) (1) Belden 9729 (2) #16 AWG Stranded	B C
Video Node	**Category 5** Ethernet (RJ45) (1) Belden 1583A (UTP)	A
DMX Node rack mount	**Category 5** Ethernet (RJ45) (1) Belden 1583A (UTP)	A
DMX Node wall mount	**Category 5** Ethernet (RJ45) (1) Belden 1583 (UTP) (2) #16 AWG Stranded	A

Device	Wire Type	
MIDI	Standard **MIDI** Cables 5 Pin Din Connector	E
Remote Focus Unit	**RFU** (XLR6) (1) Belden 9728 (2) #16 AWG Stranded	D
DMX (In + Out)	**DMX** (XLR5) Belden 9729	B
Printer - Parallel	Standard Parallel Printer Cable	G
Remote Macro	DB 15 Consult Manual or ETC Technical Services for details	H



PHYSICAL

Express Dimensions

Model	Height		Width		Depth	
	inches	cm	inches	cm	inches	cm
Express 125 and 250	6.0	15.0	35.0	89.0	15.0	38.0

Express Weights*

Model	Weight		Shipping Weight	
	lbs	kgs	lbs	kgs
Express 125 and 250	21.0	9.5	35.0	16.0

Express Accessories Dimensions*

Model	Height		Width		Depth	
	inches	cm	inches	cm	inches	cm
Express LPC	1.8	4.5	17.0	43.2	12.5	32.0
DMX Node - rack	1.8	4.5	17.0	43.2	12.5	32.0
DMX Node -wallbox	8.0	20.3	8.0	20.3	4.1	10.5
Remote Focus Unit	1.4	3.4	8.5	25.0	5.5	14.0
Video Node	1.8	4.5	17.0	43.2	12.5	32.0

Express Accessories Weights*

Model	Weight		Shipping Weight	
	lbs	kgs	lbs	kgs
Express LPC	11.0	5.0	18.3	8.3
DMX Node - rack	8.0	3.6	18.0	8.2
DMX Node -wallbox	2.2	1.0	10.0	4.5
Remote Focus Unit	3.0	1.4	5.0	2.3
Video Node	8.0	3.6	18.0	8.2

* Weights + Dimensions Typical

Electronic Theatre Controls

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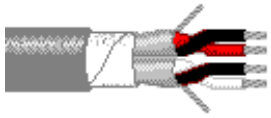
BELDENCable™

9729 Paired - Low Capacitance Computer Cable for EIA RS-422 Applications



For more information please call

1-800-Belden1

See Put-ups and Colors

Color Code Chart : No. 3 for Paired Cables (Belden Standard).pdf

Description:

24 AWG stranded (7x32) tinned copper conductors, twisted pairs, Datalene® insulation, individually shielded with 100% Beldfoil® shield, 24 AWG stranded tinned copper drain wire each pair, PVC jacket.

PHYSICAL CHARACTERISTICS:

CONDUCTOR:

Number of Pairs	2
Total Number of Conductors	4
AWG	24
Stranding	7x32
Conductor Diameter	.024 in.
Conductor Material	TC - Tinned Copper

INSULATION:

Insulation Material Trade Name	Datalene®
Insulation Material	FPE - Foam Polyethylene
Insulation Diameter	.061 in.
Lay Length	1.1 in.
Twists/ft.	10.9

Pair Color Code Chart :

Number	Color	Number	Color
1	Black & Red	2	Black & White

INNER SHIELD:

Inner Shield Material Trade Name	Beldfoil® (Z-Fold®)
Inner Shield Type	Tape
Inner Shield Material	Aluminum Foil-Polyester Tape
Inner Shield % Coverage	100 %
Inner Shield Drain Wire AWG	24
Inner Shield Drain Wire Stranding	7x32

BELDEN Cable

9729 Paired - Low Capacitance Computer Cable for EIA RS-422 Applications

Inner Shield Drain Wire Conductor Material	TC - Tinned Copper

OUTER JACKET:

Outer Jacket Material	PVC - Polyvinyl Chloride

OVERALL NOMINAL DIAMETER:

Overall Nominal Diameter	.266 in.

MECHANICAL CHARACTERISTICS:

Operating Temperature Range	-20°C To +80°C
UL Temperature Rating	60°C (UL AWM Style 2493)
Bulk Cable Weight	34.5 lbs/1000 ft.
Max. Recommended Pulling Tension	22 lbs.
Min. Bend Radius (Install)	3.25 in.

APPLICABLE SPECIFICATIONS AND AGENCY COMPLIANCE:

APPLICABLE STANDARDS:

NEC/(UL) Specification	CM
CEC/C(UL) Specification	CM
AWM Specification	UL Style 2493 (300 V 60°C)

FLAME TEST:

UL Flame Test	UL1685 UL Loading

PLENUM/NON-PLENUM:

Plenum (Y/N)	N
Plenum Number	89729, 82729

ELECTRICAL CHARACTERISTICS:

Nom. Characteristic Impedance	100 Ohms
Nom. Inductance	0.23 µH/ft
Nom. Capacitance Conductor to Conductor @ 1 KHz	12.5 pF/ft
Nom. Cap. Cond. to Other Cond. & Shield @ 1 KHz	23.2 pF/ft
Nominal Velocity of Propagation	76 %
Nom. Conductor DC Resistance @ 20 Deg. C	24 Ohms/1000 ft
Ind. Pair Nominal Shield DC Resistance @ 20 Deg. C	15 Ohms/1000 ft
Nom. Attenuation (dB/100 ft) :	

BELDEN Cable™

9729 Paired - Low Capacitance Computer Cable for EIA RS-422 Applications

Description	Frequency (MHz)	Start Frequency (MHz)	Stop Frequency (MHz)	Nom. Attenuation (dB/100 ft.)
	.384			0.74
	.7056			0.87
	.768			0.88
	1.024			0.94
	1.4112			1.01
	1.536			1.03
	2.048			1.13
	2.8224			1.29
	3.072			1.35
	4.096			1.57
	5.6448			1.78
	6.144			1.84
	8.192			2.13
	11.2896			2.45
	12.288			2.57
	24.576			3.57

Max. Operating Voltage - UL	300 V RMS (UL AWM Style 2493)
Max. Recommended Current	1 Amp per conductor @ 25°C

NOTES:

Notes	Datalene® insulation features include low dielectric constant and a dissipation factor for high-speed, low-distortion data handling. Physical properties include good crush resistance and light weight.

PUT-UPS AND COLORS:

Item	Description	Put-Up (ft.)	Ship Weight (lbs.)	Jacket Color	Notes
9729 060100	2 FS PR #24 FHDPE PVC	100	4.3	CHROME	
9729 0601000	2 FS PR #24 FHDPE PVC	1000	39	CHROME	C
9729 06010000	2 FS PR #24 FHDPE PVC	10000	390	CHROME	C Y
9729 060500	2 FS PR #24 FHDPE PVC	500	20.5	CHROME	C

C = CRATE REEL PUT-UP.

Y = FINAL PUT-UP LENGTH MAY VARY -10% TO +20% FROM LENGTH SHOWN. MAY CONTAIN 2 PIECES. MINIMUM LENGTH OF ANY ONE PIECE IS 1500'.

Revision Number: 1 Revision Date: 02-15-2005

BELDEN Cable™

9729 Paired - Low Capacitance Computer Cable for EIA RS-422 Applications

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6200FE Non-Paired - New Generation®

For more information please call

1-800-Belden1

See Put-ups and Colors

Description:

Bare copper conductors, Flamarrest® insulation, conductors cabled, overall Beldfoil® tape shield (aluminum side out) and drain wire, Flamarrest® jacket with ripcord. Sequential footage marking every two feet.

SUITABLE APPLICATIONS:

Suitable Applications	Security Systems, Intercom/PA Systems, Sound/Audio Systems, Power Limited Controls

PHYSICAL CHARACTERISTICS:

CONDUCTOR:

Number of Conductors	2
Total Number of Conductors	2
AWG	16
Stranding	19x29
Conductor Material	BC - Bare Copper

INSULATION:

Insulation Material Trade Name	Flamarrest®
Insulation Material	LS PVC - Low Smoke Polyvinylchloride
Nom. Insulation Wall Thickness	.009 in.

OVERALL CABLING:

Overall Cabling Lay Length	2 in.
Overall Cabling Twists/ft.	6.0

Overall Cabling Color Code Chart :

Number	Color	Number	Color
1	Black	2	Red

OUTER SHIELD:

Outer Shield Material Trade Name	Beldfoil®
Outer Shield Type	Tape
Outer Shield Material	Aluminum Foil-Polyester Tape w/Shorting Fold
Outer Shield %Coverage	100 %
Outer Shield Drain Wire AWG	18
Outer Shield Drain Wire Stranding	19x30

6200FE Non-Paired - New Generation®

Outer Shield Drain Wire Conductor Material	TC - Tinned Copper

OUTER JACKET:

Outer Jacket Material Trade Name	Flamarrest®
Outer Jacket Material	LS PVC - Low Smoke Polyvinyl Chloride
Outer Jacket Nominal Wall Thickness	.015 in.
Outer Jacket Ripcord	Yes

OVERALL NOMINAL DIAMETER:

Overall Nominal Diameter	.184 in.

MECHANICAL CHARACTERISTICS:

Operating Temperature Range	0°C To +75°C
UL Temperature Rating	75°C
Bulk Cable Weight	31 lbs/1000 ft.
Max. Recommended Pulling Tension	85.5 lbs.
Min. Bend Radius (Install)	1.9 in.

APPLICABLE SPECIFICATIONS AND AGENCY COMPLIANCE:

APPLICABLE STANDARDS:

NEC/(UL) Specification	CMP
NEC Articles	800
CEC/C(UL) Specification	CMP

FLAME TEST:

UL Flame Test	NFPA 262
C(UL) Flame Test	FT6

PLENUM/NON-PLENUM:

Plenum (Y/N)	Y
Plenum Number	5200FE

ELECTRICAL CHARACTERISTICS:

Nom. Inductance	.15 µH/ft
Nom. Capacitance Conductor to Conductor @ 1 KHz	81.5 pF/ft
Nom. Cap. Cond. to Other Cond. & Shield @ 1 KHz	146.7 pF/ft
Nom. Conductor DC Resistance @ 20 Deg. C	4.0 Ohms/1000 ft
Nominal Outer Shield DC Resistance @ 20 Deg. C	4.8 Ohms/1000 ft
Max. Operating Voltage - UL	300 V RMS
Max. Recommended Current	6.25 Amps per conductor @ 25°C

PUT-UPS AND COLORS:

BELDENCable™

6200FE Non-Paired - New Generation®

Item	Description	Put-Up (ft.)	Ship Weight (lbs.)	Jacket Color	Notes
6200FE 8771000	2 #16 FLRST FS FLRST	1000	33	NATURAL	C
6200FE 877500	2 #16 FLRST FS FLRST	500	16.5	NATURAL	

C = CRATE REEL PUT-UP.

Revision Number: 1 Revision Date: 02-04-2005

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1583A Paired - DataTwist® Category 5e

For more information please call

1-800-Belden1

See Put-ups and Colors

Color Code Chart : No. 8 for DataTwist Cables (Modified Western Electric).pdf

Description:

4 Pair UTP, 200MHz Category 5e, Vertical Tray Rated, 24 AWG Solid Bare Copper, Polyolefin Insulation, PVC Jacket, Rip Cord, Sequential Marking at Two Foot Intervals

SUITABLE APPLICATIONS:

Suitable Applications	Premise Horizontal Cable, Gigabit Ethernet, 100BaseTX, 100BaseVG ANYLAN, 155ATM, 622ATM, NTSC/PAL Component or Composite Video, AES/EBU, Digital Video, RS-422

PHYSICAL CHARACTERISTICS:

CONDUCTOR:

Number of Pairs	4
Total Number of Conductors	8
AWG	24
Stranding	Solid
Conductor Material	BC - Bare Copper

INSULATION:

Insulation Material	PO - Polyolefin

Pair Color Code Chart :

Number	Color	Number	Color
1	White/Blue Stripe & Blue	3	White/Green Stripe & Green
2	White/Orange Stripe & Orange	4	White/Brown Stripe & Brown

OUTER SHIELD:

Outer Shield Material	Unshielded

OUTER JACKET:

Outer Jacket Material	PVC - Polyvinyl Chloride
Outer Jacket Ripcord	Yes

OVERALL NOMINAL DIAMETER:

1583A Paired - DataTwist® Category 5e

Overall Nominal Diameter	.195 in.

MECHANICAL CHARACTERISTICS:

Operating Temperature Range	-20°C To +75°C
Bulk Cable Weight	29 lbs/1000 ft.
Max. Recommended Pulling Tension	35 lbs.
Min. Bend Radius (Install)	0.5 in.

APPLICABLE SPECIFICATIONS AND AGENCY COMPLIANCE:

APPLICABLE STANDARDS:

NEC/(UL) Specification	CM, UL444
CEC/C(UL) Specification	CM
IEC Specification	11801 Category 5
TIA/EIA Specification	568-B.2 Category 5e
Other Specification	NEMA WC-63.1 Category 5e, UL verified to Category 5e

FLAME TEST:

UL Flame Test	UL1685 UL Loading
CSA Flame Test	FT1

PLENUM/NON-PLENUM:

Plenum (Y/N)	N
Plenum Number	1585A

ELECTRICAL CHARACTERISTICS:

Nom. Mutual Capacitance @ 1 KHz	15 pF/ft
Maximum Capacitance Unbalance (pF/100 m)	330 pF/100 m
Nominal Velocity of Propagation	70 %
Maximum Delay (ns/100 m)	538 @ 100MHz ns/100 m
Maximum Delay Skew (ns/100m)	45 ns/100 m
Maximum Conductor DC Resistance @ 20 Deg. C	9.38 Ohms/100 m
Maximum DCR Unbalance @ 20 Deg. C	3 %
Max. Operating Voltage - UL	300 V RMS

ELECTRICAL CHARACTERISTICS - PREMISE:

Premise Cable Electricals Table 1 :	

1583A Paired - DataTwist® Category 5e

Frequency (MHz)	Max. Attenuation (dB/100 m)	Min. NEXT (dB)	Min. PSNEXT (dB)	Min. ACR (dB)	Min. PSACR (dB)	Min. Return Loss (dB)	Min. Structural Return Loss (dB)
1	2.0	65.3	62.3	63.0	60.0	20.0	23.0
4	4.1	56.3	53.3	51.0	49.0	23.0	23.0
8	5.8	51.8	48.8	46.0	43.0	24.5	24.5
10	6.5	50.3	47.3	43.0	41.0	25.0	25.0
16	8.2	47.3	44.3	39.0	36.0	25.0	25.0
20	9.3	45.8	42.8	36.5	33.5	25.0	25.0
25	10.4	44.3	41.3	33.9	30.9	24.3	24.3
31.25	11.7	42.9	39.9	31.0	28.0	23.6	23.6
62.5	17.0	38.4	35.4	22.0	19.0	21.5	21.5
100	22.0	35.3	32.3	14.0	11.0	20.1	20.1
155	28.1	32.5	29.5	4.4	1.4	15.8	
200	32.0	30.8	27.8	4.0	1.0	15.0	

Premise Cable Electricals Table 2 :

Frequency (MHz)	Input (Unfitted) Impedance (Ohms)	Fitted Impedance (Ohms)	Min. ELFEXT (dB)	Min. PSELFEXT (dB)
1	100 ± 15	100 ± 15	63.8	60.8
4	100 ± 15	100 ± 15	51.7	48.7
8	100 ± 15	100 ± 15	45.7	42.7
10	100 ± 15	100 ± 15	43.8	40.8
16	100 ± 15	100 ± 15	39.7	36.7
20	100 ± 15	100 ± 15	37.7	34.7
25	100 ± 15	100 ± 15	35.8	32.8
31.25	100 ± 15	100 ± 15	33.9	30.9
62.5	100 ± 15	100 ± 15	27.8	24.8
100	100 ± 15	100 ± 15	23.8	20.8
155	100 ± 25	100 ± 15	19.9	16.9
200	100 ± 25	100 ± 15	17.7	14.7

PUT-UPS AND COLORS:

Item	Description	Put-Up (ft.)	Ship Weight (lbs.)	Jacket Color	Notes
1583A 0021000	4 PR #24 PP FR PVC	1000	21	RED	C
1583A 002U1000	4 PR #24 PP FR PVC	U1000	21	RED	
1583A 0031000	4 PR #24 PP FR PVC	1000	21	ORANGE	C
1583A 003U1000	4 PR #24 PP FR PVC	U1000	21	ORANGE	
1583A 0041000	4 PR #24 PP FR PVC	1000	21	YELLOW	C
1583A 004U1000	4 PR #24 PP FR PVC	U1000	21	YELLOW	
1583A 0051000	4 PR #24 PP FR PVC	1000	21	GREEN, DARK	C

1583A Paired - DataTwist® Category 5e

1583A 005U1000	4 PR #24 PP FR PVC	U1000	21	GREEN, DARK	
1583A 0061000	4 PR #24 PP FR PVC	1000	21	BLUE, LIGHT	C
1583A 0061640	4 PR #24 PP FR PVC	1640	34.44	BLUE, LIGHT	
1583A 0063000	4 PR #24 PP FR PVC	3000	63	BLUE, LIGHT	C
1583A 006U1000	4 PR #24 PP FR PVC	U1000	21	BLUE, LIGHT	
1583A 0091000	4 PR #24 PP FR PVC	1000	21	WHITE	C
1583A 0093000	4 PR #24 PP FR PVC	3000	63	WHITE	C
1583A 009U1000	4 PR #24 PP FR PVC	U1000	21	WHITE	
1583A 0101000	4 PR #24 PP FR PVC	1000	21	BLACK	C
1583A 010U1000	4 PR #24 PP FR PVC	U1000	21	BLACK	
1583A 0121000	4 PR #24 PP FR PVC	1000	21	PINK	C
1583A 012U1000	4 PR #24 PP FR PVC	U1000	21	PINK	
1583A F6H1000	4 PR #24 PP FR PVC	1000	21	GRAY, DARK PEARL	C
1583A F6H1640	4 PR #24 PP FR PVC	1640	34.44	GRAY, DARK PEARL	
1583A F6H3000	4 PR #24 PP FR PVC	3000	63	GRAY, DARK PEARL	C
1583A F6HU1000	4 PR #24 PP FR PVC	U1000	21	GRAY, DARK PEARL	

C = CRATE REEL PUT-UP.

Revision Number: 2 Revision Date: 03-07-2005

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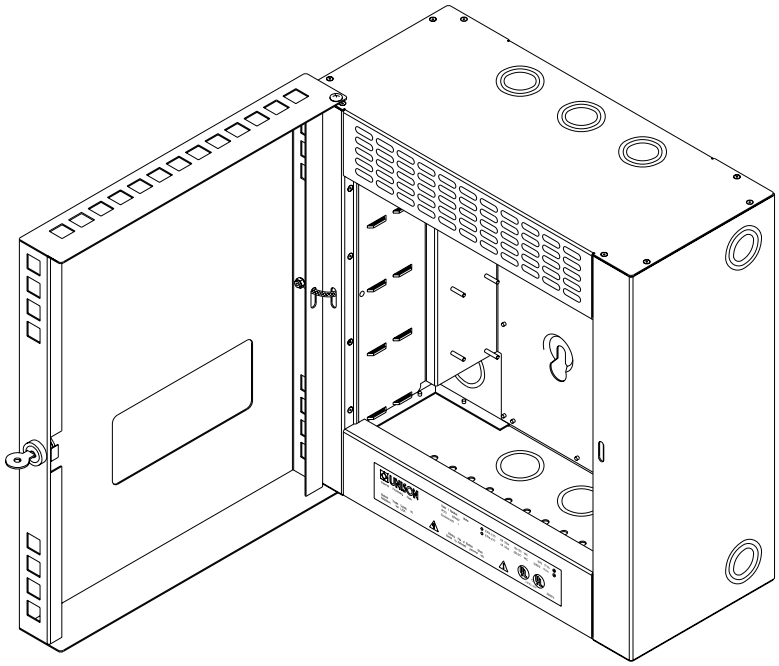
Unison® External Processing Rack

ER Series



GENERAL INFORMATION

Unison ER Series brings the power of Unison control to your distributed Unison, Sensor or other DMX-512 dimming system.

APPLICATIONS
- Churches
- Hotels
- Convention Centers
- Theatres
- Schools
- Restaurants
- Theme Parks

FEATURES
- Low profile rack
- Fully pre-wired
- Easy installation, configuration and operation
- Scalable modular processing
- Rack mount options

GENERAL
- 100, 120, 230 and 277 Volt systems
- Ambient Temperature: 32-104°F/0-40°C
- Ambient Humidity: 30-90° (non-condensing)
- UL and cUL LISTED, CE Marked

ORDERING INFORMATION

100-277 Volt - ER Racks

Model#	Description
ER4-100	Surface mount - 100V External Processing Rack
ER4-120	Surface mount - 120V External Processing Rack
ER4-230	Surface mount - 230V External Processing Rack
ER4-277	Surface mount - 277V External Processing Rack

Control Modules

Model#	Description
CME	Extended Architectural Control Module
CMEi	Extended Architectural Control Module w/ Network Connection

Options and Modules

Model#	Description
REP	Repeater Option Module
AIR	Blank Air flow Option Module

Accessories

Model#	Description
RM 5C	19" Rack Mount Kit–5C
RM BL	19" Rack Mount Kit–Black

SPECIFICATIONS

GENERAL

External Processing Rack (ER4) houses the architectural control processor and option modules

Provides architectural lighting control for Unison, Sensor, and other DMX512 dimming racks

Ambient room temperature: 0-40˚C / 32-104˚F

Ambient humidity: 30-90% non-condensing

All racks UL and cUL LISTED

MECHANICAL

18 gauge formed steel panels

Fine-textured, scratch resistant, epoxy paint

ER4 may be wall mounted, or rack mounted when installed with the Rack mount kit (RM 5C)

Top, bottom, and side knockouts facilitate conduit entry

Full height hinged locking door

No tools required for module removal or installation

Front access to all wiring and terminations

ELECTRICAL

External Processing Racks are available in 100-120, 230 and 277 volt, single phase configurations.

Completely pre-wired by the manufacturer

Designed to support the following wire terminations:

AC (single phase)

Echelon Link Power
24VDC
DMX512 In
DMX512 Out
RS232 Serial In/Out
Category 5 UTP(CMEi only)
Multi-Mode Fiber Optic with ST Connector (CMEi only)

Contractor supplies the input and control wiring

All control wire terminations are terminated via the factory provided connectors.

CONTROL MODULE VARIANTS

CME – Control module with station processor

CMEi – Control module with station processor and network connections

The CM contains a nine button membrane overlay and a two line by 20 character LCD for system configuration, testing and diagnostics.

The architectural station processor (E) accepts Echelon Link Power control signals from the Unison control stations and remote interfaces.

The Link Power network utilizes a polarity-independent, low-voltage Class II twisted pair wiring.

Belden type 8471 (unshielded) or Belden 8719 (shielded) or equivalent and (1) #14 ESD drain wire (drain wire not required for systems installed in metal conduit).

Network wiring may not exceed 1500’ (500m) without the use of a repeater (REP). The repeater option module increases network wire length in increments of 1500’ (500m).

Control wiring terminates in the ER rack via provided connectors.

Architectural station processors require a Light Manager system configuration

Station configuration and program information are stored in non-volatile flash memory.

A 3.5" floppy disk drive is used to facilitate loading of station configuration into the system processor. (CME & CMEi)

CMEi control modules allow connection to an Ethernet network for system configurations and monitoring, via Cat 5 or Fiber Optic

The architectural processor controls 512 dimmers, 512 zones with 32 wall stations - 4 LCD stations maximum.

A Repeater option module (REP) may be used to increase station count in increments of 32.

OPTION MODULE

Option modules are housed in a formed steel body and require no discrete wire connections.

Tool free insertion and removal

Option module variants include:

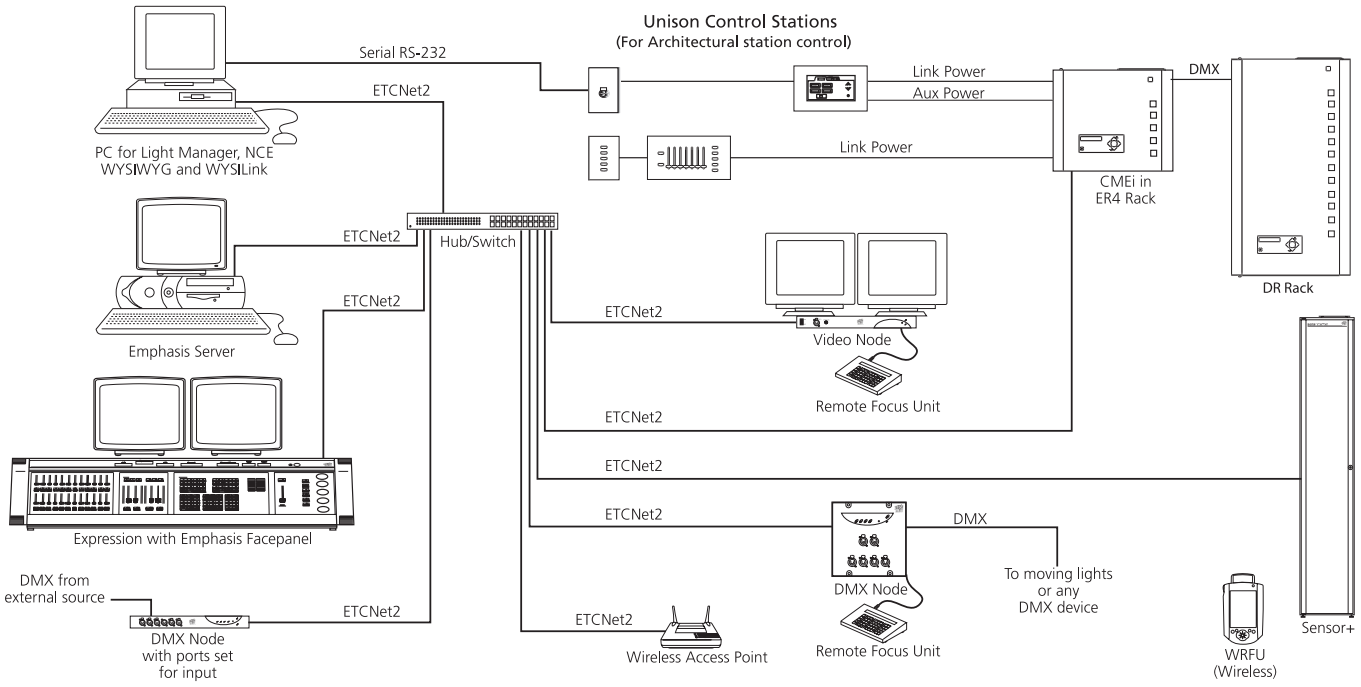
REP – Repeater Option module, which provides:
- Repeated Link Power and 24VDC control power
- Adds 1500’ (500m) to the total potential wire run
- Powers additional 32 wall stations
- Powers 4 LCD or PC interface stations

AIR – Airflow Option modules are required for any empty option module space in the ER4 enclosure.

ACCESSORIES

A 19’ rack mount kit (RM 5C) also available

UNISON CONTROL



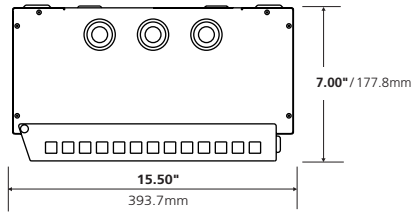
WIRING

Wiring Specification

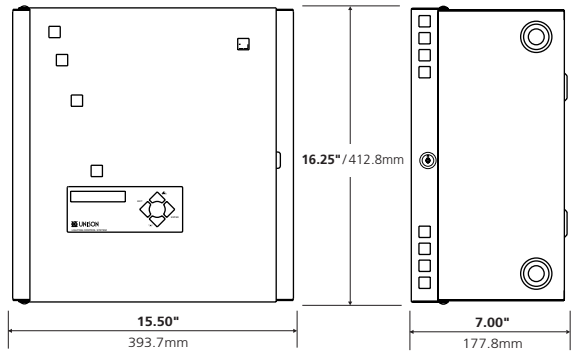
Description	Specification	Maximum Length
Unison Link Power (PLP)	Belden 8471	1640' (500m)
AUX Power	(2) #16AWG	
ESD Ground	(1) #14AWG	
DMX	(1) Belden 9729	1640' (500m)
ETCNet2	(1)CAT5-UTP	328 Ft (100m)

ER 4 Wall Mount

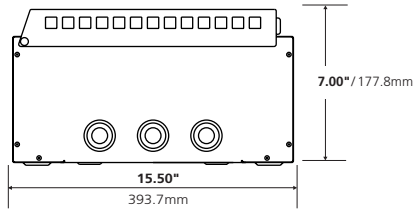
TOP VIEW



FRONT VIEW

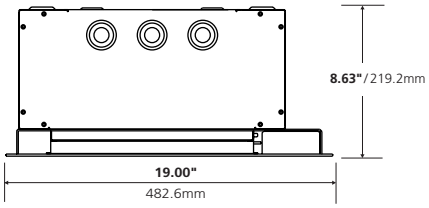


BOTTOM VIEW

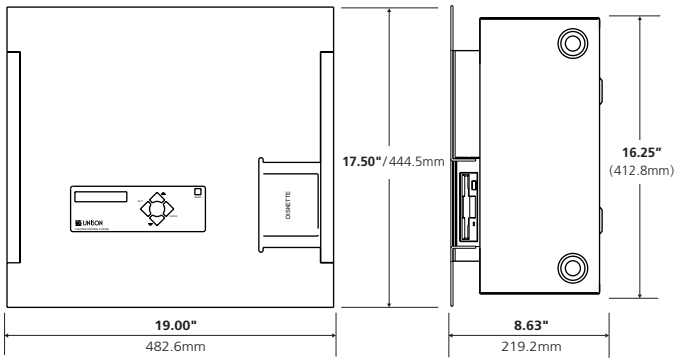


ER 4 Rack Mount

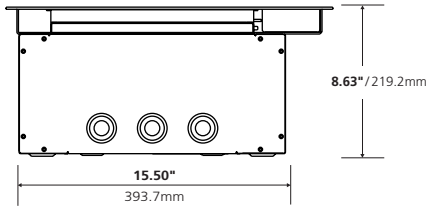
TOP VIEW



FRONT VIEW



BOTTOM VIEW



DIMENSIONS

Rack Dimensions

Model	Height		Width		Depth	
	inches	mm	inches	mm	inches	mm
ER4	16.25	412.8	15.5	393.7	7.0	177.8
ER4-RM	17.50	444.5	19.0	482.6	8.63	219.2

WEIGHTS

Rack Weights*–no modules

Model	Weight		Shipping Weight	
	lbs	kgs	lbs	kgs
ER4	20	9.1	24	10.9
ER4-RM	12	5.4	14	6.3

* Weights and Dimensions typical

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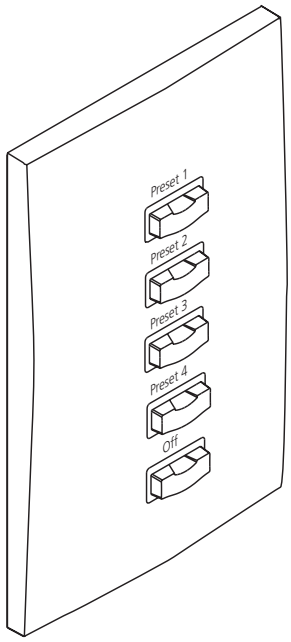


GENERAL INFORMATION

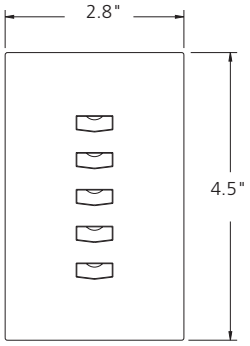
Unison button stations are specially designed for reliable, recall of pre-programmed presets or macros. Ideal for entrance locations.

APPLICATIONS
Churches
Hotels
Convention Centers
Meeting Rooms
Schools
Restaurants

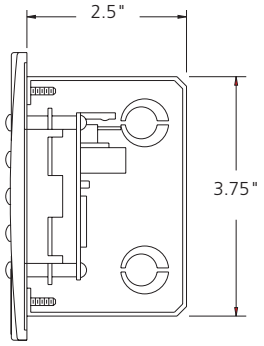
FEATURES
Programmable buttons
Individual zone, and master control
Preset recall
Room combine
Macro activation
Link Power control network
Topology free wiring
Connectorized station termination
Designer appeal
Custom station designs (1 gang shown) (wood, metal)

DIMENSIONS

Front View



Side View



ORDERING INFORMATION

Button Stations

	Model #	Description	Legend
	U00001- __1F	1/2 gang, 1 button	On/Off
	U00001- __2F	1/2 gang, 1 button	Entry
	U00001- __3F	1/2 gang, 1 button	Panic
	U00002- __1F	1/2 gang, 2 button	On, Off
	U00002- __2F	1/2 gang, 2 button	Open, Close
	U00005- __1F	1/2 gang, 5 button	Preset 1-4, Off
	U10001- __1F	1 gang, 1 button	On/Off
	U10001- __2F	1 gang, 1 button	Entry
	U10001- __3F	1 gang, 1 button	Panic
	U10002- __1F	1 gang, 2 button	On, Off
	U10002- __2F	1 gang, 2 button	Open, Close
	U10005- __1F*	1 gang, 5 button	Preset 1-4, Off
	U10007- __1F	1 gang, 7 button	Raise, Lower, Preset 1-4, Off
	U10010- __1F	1 gang, 10 button	Preset 1-9, Off
	U11K00- __1F	1 gang, 1 keyswitch (maintained**)	Lockout
	U11K01- __1F	1 gang, 1 keyswitch (maintained**), 1 button	Lockout, On/Off
	U11K01- __2F	1 gang, 1 keyswitch (maintained**), 1 button	Lockout, Entry
	U11K01- __3F	1 gang, 1 keyswitch (maintained**), 1 button	Lockout, Panic
	U11K02- __1F	1 gang, 1 keyswitch (maintained**), 2 button	Lockout, On, Off
	U11K02- __2F	1 gang, 1 keyswitch (maintained**), 2 button	Lockout, Open, Close
	U11K05- __1F	1 gang, 1 keyswitch (maintained**), 5 button	Lockout, Preset 1-4, Off

*Product shown above.
**Keyswitch stations available in momentary configurations.

Notes:
Enter station color code in __ space provided. 1-white, 2-ivory, 3-gray, 4-black.
Above stations flush mount (F) in industry standard gang boxes. (Not by ETC.)
Also available in surface mount (S) and portable (P) configurations.

SPECIFICATIONS

MECHANICAL

Button stations shall consist of an electronic assembly and faceplate which shall utilize a cantilever styled switch array.

Stations shall flush mount in industry standard 1-gang back boxes (provided by others).

Surface mount back-boxes shall be available for one-gang stations.

Station faceplates and button caps shall be constructed of injection molded, ABS plastic.

Buttons shall contain an integral LED response indicator.

Stations shall have no visible means of attachment.

All station legends shall be silk-screened in a scratch and wear resistant dark gray paint.

Button stations shall be available in white, ivory, gray and black. Custom colors shall be available with sample.

Button stations shall be available with 1, 2, 5, 7, and 10 buttons. Custom button stations shall be available.

1, 2, and 5 button stations shall be available with a maintained or momentary keyswitch.

ELECTRICAL

Button stations shall connect to Echelon* LONWORKS* Link Power control network.

Link Power network shall utilize low voltage Class II unshielded twisted pair, Belden type 8471 or equivalent and (1) #14 ESD drain wire (Drain wire not required when installed in grounded metal conduit).

Link Power network wiring shall not exceed 1500' (500m) without the use of a repeater. The REP, Repeater Option module shall increase network wire length in increments of 1500' (500m). Maximum (4) LCD's per power supply, total 32 stations per repeater.

The Unison station protocol is Echelon Link Power.

Link Power network shall be topology free and polarity independent. Wiring may be bus, loop, home-run or any combination of these.

All station terminations shall be connectorized.

FUNCTIONAL

Buttons station components shall be designed to operate default or custom system functions. Optional button functions shall be programmable via Light Manager.

Button function options shall include: preset selection, manual mode activation, record mode activation, station lockout, raise, lower, macro activation, zone on/off control and wall open/close or toggle.

Button station components shall allow programming of individual lockout levels.

DIMENSIONS

Flush Backbox Dimensions

Gang	Height		Width		Depth	
	inches	cm	inches	cm	inches	cm
1/2 (by ETC)	3.75	9.53	1.3	3.3	3.25	8.26
1 (RACO 690*)	3.75	9.53	2.0	5.08	2.5	6.35

Surface Backbox Dimensions

Gang	Height		Width		Depth	
	inches	cm	inches	cm	inches	cm
1/2 (by ETC)	3.75	9.53	1.75	4.45	3.25	8.26
1 (RACO 690*)	3.75	9.53	2.0	5.08	2.5	6.35

*or equivalent

Faceplate Dimensions

Gang	Height		Width	
	inches	cm	inches	cm
1/2	4.5	11.43	1.75	4.45
1	4.5	11.43	2.8	7.1

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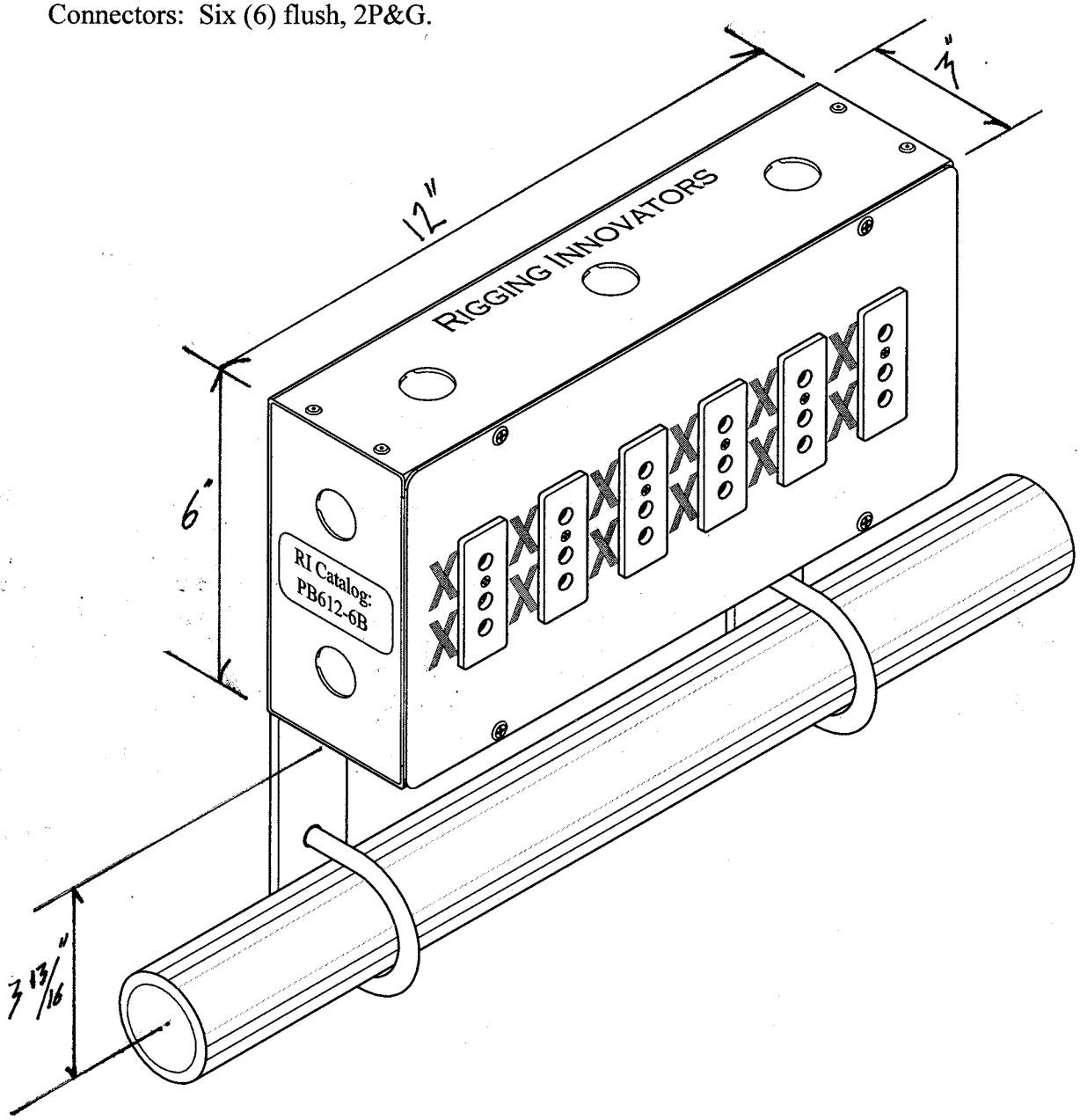
Catalog # PB612-6B

RIGGING INNOVATORS

Pipe Box, 6" x 12", with two (2) Pipe Brackets.
Connectors: Six (6) flush, 2P&G.

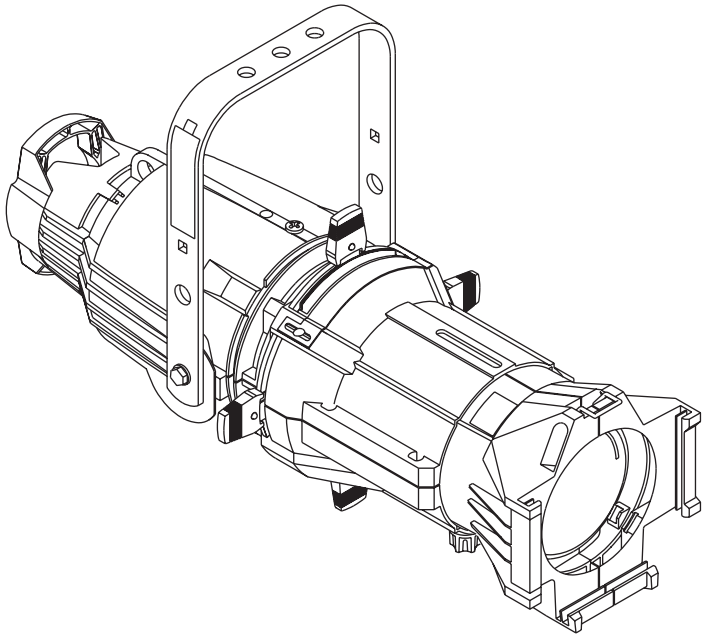


Pipe Box

E118218

Product Description:

Box and cover are fabricated of 18 gauge CRS.
Conduit knockouts exist on the top and both sides.
Pipe mounting brackets (2) with u-bolts are supplied.
Only specification grade 20Amp receptacles are used.
Ground lug is installed.
White die-cut circuit designations are included.



SPECIFICATIONS

Ellipsoidal lighting fixture

PHYSICAL
- Die cast aluminum construction
- Rotating shutter assembly ±25°
- 20 gauge stainless steel shutters in a tri-plane assembly
- Interchangeable lens tubes with smooth–running teflon guides provide six user-fit field angle options
- Thermally insulated rear handle
- High impact, thermally insulated knobs and shutter handles
- Two accessory slots, and a top mounted, gel frame retainer
- Steel yoke with two mounting positions
- Positive locking single-clutch fixture body
- Slot for glass or stainless steel patterns
- Slot with sliding cover for motorized pattern devices or optional iris
- UL and cUL listed

ELECTRICAL
- 115-240V, 50/60Hz
- High temperature 3–conductor 36" leads in a glass fiber outer sleeve
- Supports ETC Dimmer Doubling™ technology

LAMP
- 750W maximum
- HPL — compact tungsten filament contained in a krypton-filled quartz envelope (see table for suitable lamp types)
- Patented filament geometry makes for extremely efficient light collection and transmission
- Integral die cast aluminum heat sink lamp base

OPTICAL
- Projector-quality, high contrast meniscus front lens and bi-convex rear lens
- Faceted borosilicate reflector with multi-layer dichroic coating
- 95% of visible light reflected through the optical train
- 90% of infrared radiation (heat) passes through the reflector
- Reflector secured with anti-vibration shock mounts
- Lens(es) secured with anti-vibration shock mounts
- Tool free lamp centering (X/Y) and peak/flat (Z) adjustment knobs
- Positive locking X, Y and Z adjustments, unaffected by relamping
- Beam edge continually adjustable hard–to–soft
- Interchangeable lens barrels permit selection of 5°, 10°, 19°, 26°, 36°, and 50° field angles

ORDERING INFORMATION

Source Four

Model#	Description
436	36° ellipsoidal (black)
436-1	36° ellipsoidal (white)

ETC Source Four are supplied with C-clamp, color frame and 3' (96cm) leads as standard

Connector Designation

Use Suffixes below to specify Factory–Fitted Connector type

Model#	Description
A	Parallel-blade U-ground connector
B	Two-pin and ground, 20 amp connector
C	Grounded, 20 amp, twistlock connector
M	Dimmer Doubling™ Connector (NEMA L515P)

Source Four Accessories

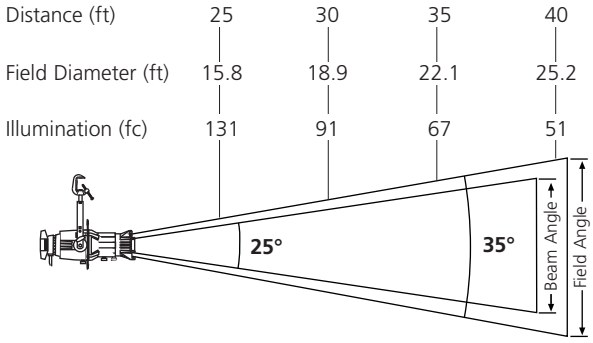
Model#	Description
436LT	36° lens tube with lenses installed (black)
436LT-1	36° lens tube with lenses installed (white)
400CC	C–clamp (included)
400PH–A	Pattern holder (A size)
400PH–B	Pattern holder (B size)
400PH–G	Glass pattern holder
400SC	Safety cable
400RS	Drop–in iris
400CF	Colorframe (6.25") (included)
400DN	Donut (6.25")
400TH	Top hat
400HH	Half hat
400GE	Gel extender
407GE	Conical gel extender
407CF	7.5" Square color frame
400FB	Source Four Fixture Body, Single Clutch

Note: For colors other than black or white, please call ETC.

PHOTOMETRIC

All photometric data in this document was prepared using standard production fixtures, and the Prometric™ CCD measurement system. Fixtures were adjusted for cosine distribution, and were tested with a calibrated HPL 750/115V 21,900 lumens lamp at its rated voltage. All data were normalized to nominal lamp lumens.

36°



For illumination with any lamp, multiply the candlepower of a beam spread by the multiplying factor (mf) shown for that lamp.

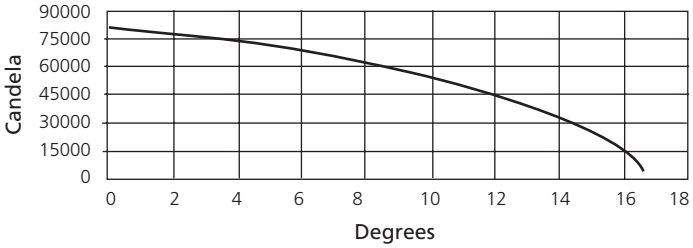
To determine illumination in footcandles or lux at any throw distance, divide candlepower by distance squared.

For Field diameter at any distance, multiply distance by .63

For Beam diameter at any distance, multiply distance by .45

Metric Conversions: For Meters multiply feet by .3048
For Lux multiply footcandles by 10.76

Candlepower Distribution Curve (cosine)



Source Four 36° cosine

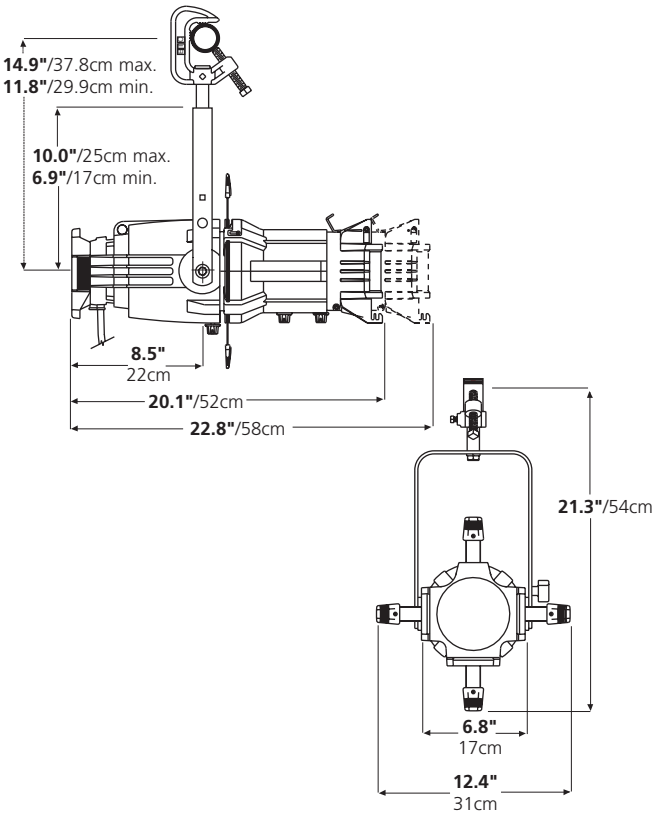
Degree	Candlepower	Field Lumens	Beam Lumens	Efficiency
36°	82,000	12,300	8,030	56.2%

PHYSICAL

Lamp code	Watts	Volts	Initial Lumens	Color Temp.	Average Rated Life	MF
HPL 750/115	750	115	21,900	3,250˚	300	1.00
HPL 575/115	575	115	16,520	3,250˚	300	0.87
HPL 575/115X	575	115	12,360	3,050˚	2000	0.66
HPL 575/120	575	120	16,460	3,250˚	300	0.87
HPL 375/115	375	115	10,540	3,200˚	300	0.55
HPL 375/115X	375	115	8,060	3,000˚	1000	0.43
HPL 550/77*	550	77	16,170	3,250˚	300	0.87
HPL 550/77X*	550	77	12,160	3,050˚	2000	0.66
HPL 750/230	750	230	19,400	3,200˚	300	0.90
HPL 750/240	750	240	19,400	3,200˚	300	0.90
HPL 575/230	575	230	14,900	3,200˚	400	0.76
HPL 575/240	575	240	14,900	3,200˚	400	0.76
HPL 575/230X	575	230	11,780	3,050˚	1500	0.61
HPL 575/240X	575	240	11,780	3,050˚	1500	0.64
HPL 375/230X	375	230	7,800	3,050˚	1000	0.38
HPL 375/240X	375	240	7,800	3,050˚	1000	0.38

*77V lamps are intended for use with the ETC Dimmer Doubler™.

Warning: Use of lamps other than HPL will void UL/cUL safety approval and product warranty. Source Four is rated for 750W maximum.



Source Four Weights

Model	Fixture Weight*		Shipping Weight	
	lbs	kgs	lbs	kgs
36°	14	6.3	20	9.1

* Add 2.3 lbs for C-clamp

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Europe ■ 5 Victoria Industrial Estate, Victoria Road, London W3 6UU, UK ■ Tel: +44 (0)20 8896 1000 ■ Fax: +44 (0)20 8896 2000
Asia ■ Room 605-606, Tower III Enterprise Square, 9 Sheung Yuet Road, Kowloon Bay, Kowloon, Hong Kong ■ Tel: +852 2799 1220 ■ Fax: +852 2799 9325
Web: www.etcconnect.com ■ **Email:** (US) mail@etcconnect.com ■ (UK) mail@etceurope.com ■ (Asia) mail@etcasia.com

Source Four® products protected by U.S. Patent Numbers 5,268,613, 5,345,371, 5,544,029, 5,446,637 and 5,775,799; Japanese Patent Number 2,501,772; US and International Patents Pending.
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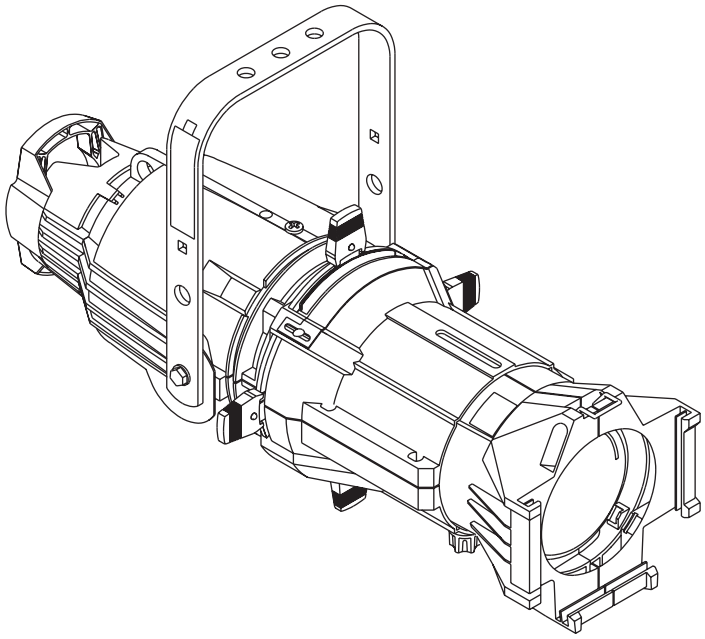


SPECIFICATIONS

Ellipsoidal lighting fixture

PHYSICAL
- Die cast aluminum construction
- Rotating shutter assembly ±25°
- 20 gauge stainless steel shutters in a tri-plane assembly
- Interchangeable lens tubes with smooth–running teflon guides provide six user-fit field angle options
- Thermally insulated rear handle
- High impact, thermally insulated knobs and shutter handles
- Two accessory slots, and a top mounted, gel frame retainer
- Steel yoke with two mounting positions
- Positive locking single-clutch fixture body
- Slot for glass or stainless steel patterns
- Slot with sliding cover for motorized pattern devices or optional iris
- UL and cUL listed

ELECTRICAL
- 115-240V, 50/60Hz
- High temperature 3–conductor 36" leads in a glass fiber outer sleeve
- Supports ETC Dimmer Doubling™ technology

LAMP
- 750W maximum
- HPL — compact tungsten filament contained in a krypton-filled quartz envelope (see table for suitable lamp types)
- Patented filament geometry makes for extremely efficient light collection and transmission
- Integral die cast aluminum heat sink lamp base

OPTICAL
- Projector-quality, high contrast aspheric lens
- Faceted borosilicate reflector with multi-layer dichroic coating
- 95% of visible light reflected through the optical train
- 90% of infrared radiation (heat) passes through the reflector
- Reflector secured with anti-vibration shock mounts
- Lens(es) secured with anti-vibration shock mounts
- Tool free lamp centering (X/Y) and peak/flat (Z) adjustment knobs
- Positive locking X, Y and Z adjustments, unaffected by relamping
- Beam edge continually adjustable hard–to–soft
- Interchangeable lens barrels permit selection of 5°, 10°, 19°, 26°, 36°, and 50° field angles

ORDERING INFORMATION

Source Four

Model#	Description
450	50° ellipsoidal (black)
450-1	50° ellipsoidal (white)

ETC Source Four are supplied with C-clamp, color frame and 3' (96cm) leads as standard

Connector Designation

Use Suffixes below to specify Factory–Fitted Connector type

Model#	Description
A	Parallel-blade U-ground connector
B	Two-pin and ground, 20 amp connector
C	Grounded, 20 amp, twistlock connector
M	Dimmer Doubling™ Connector (NEMA L515P)

Source Four Accessories

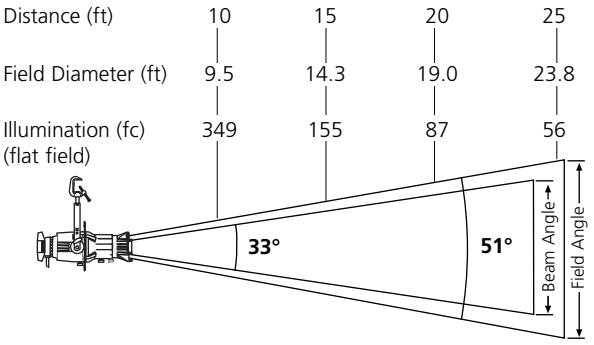
Model#	Description
450LT	50° lens tube with lens installed (black)
450LT-1	50° lens tube with lens installed (white)
400CC	C–clamp (included)
400PH–A	Pattern holder (A size)
400PH–B	Pattern holder (B size)
400PH–G	Glass pattern holder
400SC	Safety cable
400RS	Drop–in iris
400CF	Colorframe (6.25") (included)
400DN	Donut (6.25")
400TH	Top hat
400HH	Half hat
400GE	Gel extender
407GE	Conical gel extender
407CF	7.5" Square color frame
400FB	Source Four Fixture Body, Single Clutch

Note: For colors other than black or white, please call ETC.

PHOTOMETRIC

All photometric data in this document was prepared using standard production fixtures, and the Prometric™ CCD measurement system. Fixtures were adjusted for cosine distribution, and were tested with a calibrated HPL 750/115V 21,900 lumens lamp at its rated voltage. All data were normalized to nominal lamp lumens.

50°



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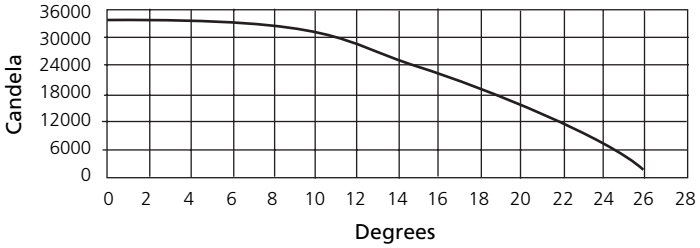
To determine illumination in footcandles or lux at any throw distance, divide candlepower by distance squared.

For Field diameter at any distance, multiply distance by .95

For Beam diameter at any distance, multiply distance by .60

Metric Conversions: For Meters multiply feet by .3048
For Lux multiply footcandles by 10.76

Candlepower Distribution Curve (cosine)



Source Four 50° cosine

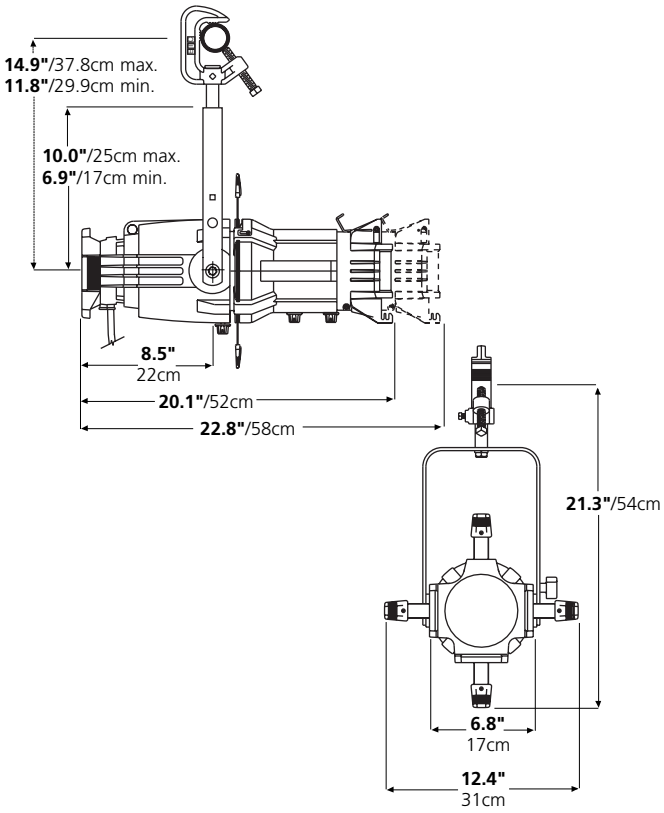
Degree	Candlepower	Field Lumens	Beam Lumens	Efficiency
50°	34,900	12,400	8,220	56.6%

PHYSICAL

Lamp code	Watts	Volts	Initial Lumens	Color Temp.	Average Rated Life	MF
HPL 750/115	750	115	21,900	3,250˚	300	1.00
HPL 575/115	575	115	16,520	3,250˚	300	0.87
HPL 575/115X	575	115	12,360	3,050˚	2000	0.66
HPL 575/120	575	120	16,460	3,250˚	300	0.87
HPL 375/115	375	115	10,540	3,200˚	300	0.55
HPL 375/115X	375	115	8,060	3,000˚	1000	0.43
HPL 550/77*	550	77	16,170	3,250˚	300	0.87
HPL 550/77X*	550	77	12,160	3,050˚	2000	0.66
HPL 750/230	750	230	19,400	3,200˚	300	0.90
HPL 750/240	750	240	19,400	3,200˚	300	0.90
HPL 575/230	575	230	14,900	3,200˚	400	0.76
HPL 575/240	575	240	14,900	3,200˚	400	0.76
HPL 575/230X	575	230	11,780	3,050˚	1500	0.61
HPL 575/240X	575	240	11,780	3,050˚	1500	0.64
HPL 375/230X	375	230	7,800	3,050˚	1000	0.38
HPL 375/240X	375	240	7,800	3,050˚	1000	0.38

*77V lamps are intended for use with the ETC Dimmer Doubler™.

Warning: Use of lamps other than HPL will void UL/cUL safety approval and product warranty. Source Four is rated for 750W maximum.



Source Four Weights

Model	Fixture Weight*		Shipping Weight	
	lbs	kgs	lbs	kgs
50°	14	6.3	20	9.1

* Add 2.3 lbs for C-clamp

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Web: www.etcconnect.com ■ **Email:** (US) mail@etcconnect.com ■ (UK) mail@etceurope.com ■ (Asia) mail@etcasia.com

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Catalog Numbers

65Q

~~165Q~~

Fixture Type:

A lightweight, short-throw, all-purpose lighting device, the 6″ fresnel produces a soft-edged beam varying in diameter from 4.2 feet to 21 feet at a throw distance of 15 feet.

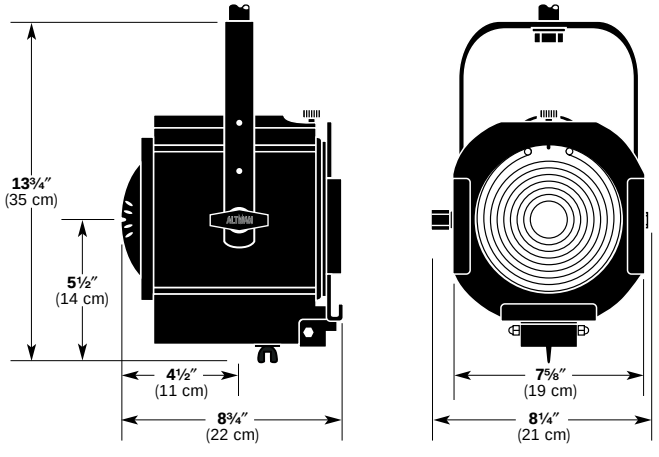
The 65Q and 165Q are designed for operation with long-life, high-intensity tungsten-halogen lamps. The luminaire is used in theatre for acting area lighting where beam shaping is not required, or in television studios for key and back lighting. Other uses include nightclubs, museums and show windows where soft-edged controlled lighting is required.

Specifications subject to change without notice.

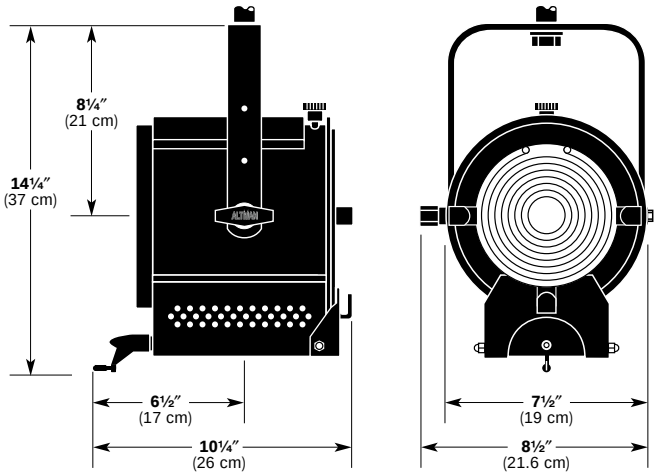
~~750-WATT~~ ~~7″ FRESNEL~~

~~Features~~

- ~~Sheet-steel welded construction~~
- ~~Specular spherical Alzak aluminum reflector~~
- ~~Spot-to-flood focus adjustment~~
- ~~Screw-feed focus (165Q only)~~
- ~~6″ heat-resistant fresnel lens~~
- ~~Medium prefocus socket~~
- ~~Color frame and safety cable with spring clip included~~
- ~~Three 36″ Teflon® lead wires~~
- ~~Up to 25′ of Hi-Temp rubber cable optional~~
- ~~U.L.-, c.U.L.-, and CE-listed for 750 watts~~
- ~~Made in the U.S.A.~~



65Q



~~165Q~~

ALTMAN Lighting, Inc.

BRINGING IMAGINATION TO LIGHT

~~750-WATT~~ 7″ ~~FRESNEL~~

Specifications

Housing: Sheet-steel construction.

Materials: Corrosion-resistant materials and hardware.

Yoke: Rigid flat steel with clearance hole for ½″ bolt.

Reflector: Alzak aluminum, spherical design.

Lens: Pyrex fresnel lens with stippling on flat surface.

Socket: Altman medium prefocus, tool-free relamping.

Rating: 120/240 volts AC/DC operation, 6.3/3.1 amps, 750 watts maximum.

Cable: 36″ Teflon® leads encased in black fiberglass sleeving. Up to 25′ Hi-Temp rubber cable optional.

Access Door: Hinged; allows tool-free access to lens, reflector and lamp.

Focusing: For the 65Q, adjusted with locking thumb screw on bottom surface. For the 165Q, adjusted with easy-operation rear-mounted screw feed.

Accessories: Accepts standard 7½″ accessories.

Finish: Black epoxy Sandtex, electrostatic application.

Weight: Approx. 9.0 lbs. (4.1 Kg) for the 65Q and approx. 10.5 lbs. (4.7 Kg) for the 165Q.

Catalog Numbers
65Q
~~165Q~~

ACCESSORIES SUPPLIED WITH LUMINAIRE	
6-CF	Color Frame
SC-36-BK	Safety Cable with Spring Clip

ADDITIONAL ACCESSORIES	
510	Malleable Iron Pipe Clamp
6-BD-4	4-Way Barn Door
6-SN	Snoot
404-6	Motorized Color Wheel

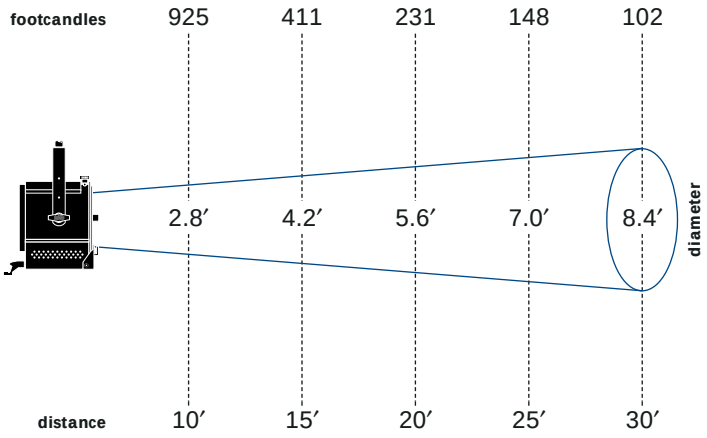
LAMP INFORMATION

fixture series	watts	ANSI code	manufacturer lamp code	color temp. (°K)	rated life (hrs)	rated lumens	correction factor
6″ Fresnel	500	BTL	Q500 T6/CL/P	3050	500	11,000	.65
"	500	BTM		3200	100	13,000	.76
"	750	BTN	Q750 T7/CL/2P	3050	500	17,000	1.00
"	750	BTP	Q750 T7/4CL/2P	3200	200	20,000	1.20

65Q AND 165Q PHOTOMETRIC DATA WITH BTN LAMP

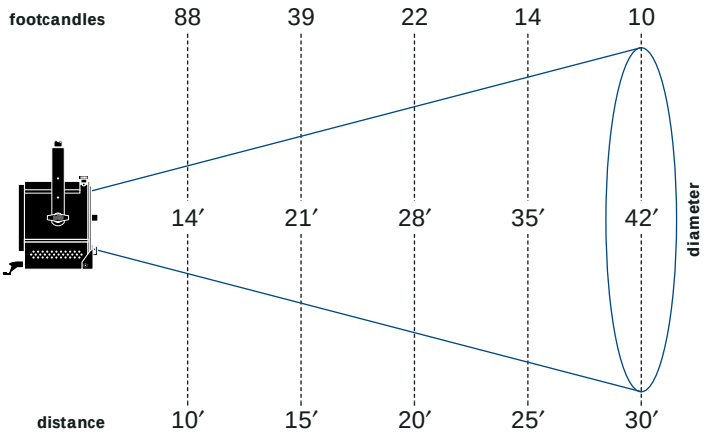
SPOT FOCUS

Field Angle: 16°
Beam Angle: 9°
Candlepower: 92,500
Efficiency: 14.8%



FLOOD FOCUS

Field Angle: 70°
Beam Angle: 59°
Candlepower: 8,800
Efficiency: 47.3%



ALTMAN Lighting, Inc.
BRINGING IMAGINATION TO LIGHT

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Teflon® is a registered trademark of E.I. du Pont de Nemours and Company.

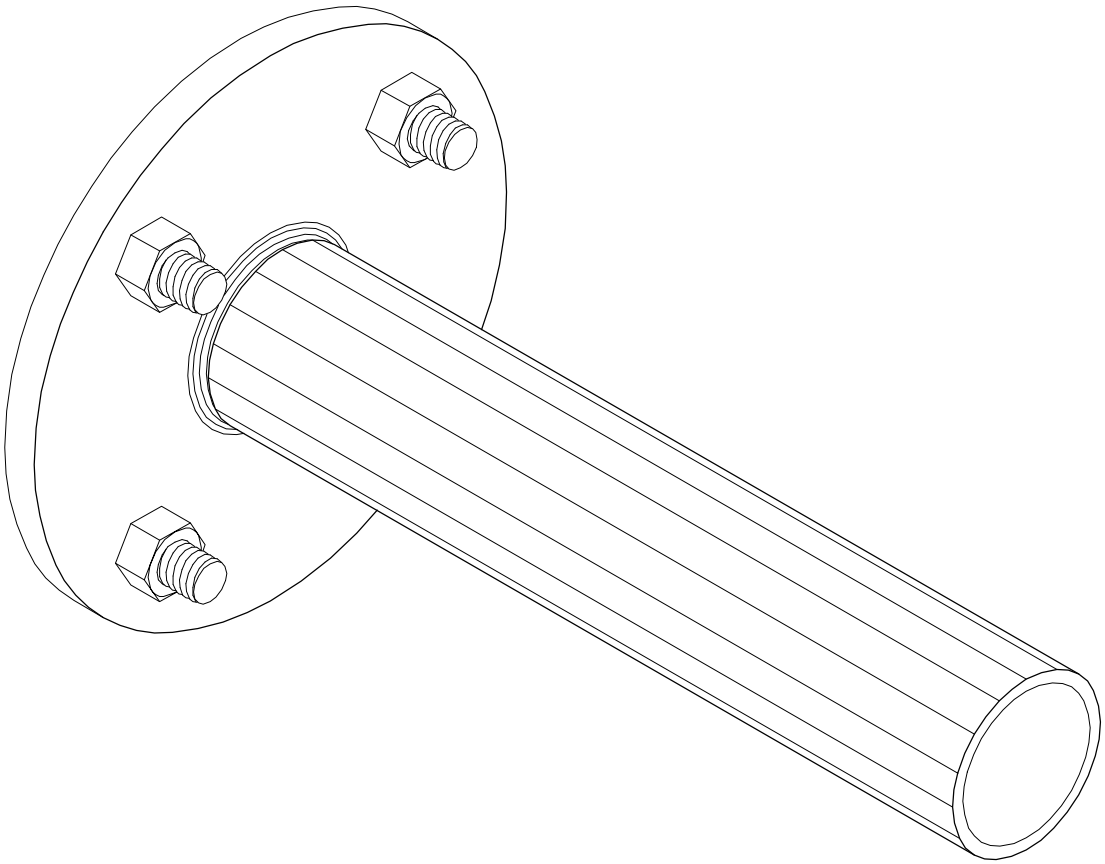
SANDWICH HOLDERS

- Aluminum construction acts as a heat sink to minimize pattern warpage
- Large heat resistant ring pulls

Name	A	B	Cat. #
S4 “A”	3 11/16”	3 3/16”	2150
S4 “B”	**3 11/16”**	**2 3/4”**	**2160**
S4 Jr. “M”	2 11/16”	2 5/32”	2165
SL “B”	4 3/16”	2 3/4”	2144
360Q/Shakespeare	3 5/16”	2 3/4”	2120
Colortran Style (5/50 Series)	4”	3 1/16”	2190
Juliat “A”	4 11/16”	3 3/16”	3500
Juliat “B”	4 11/16”	2 3/4”	3501

Catalog # Wall Flange

Stabilizer for the Perimeter of Pipe Grids
Telescopic tube to fit 1.5" sch 40 pipe

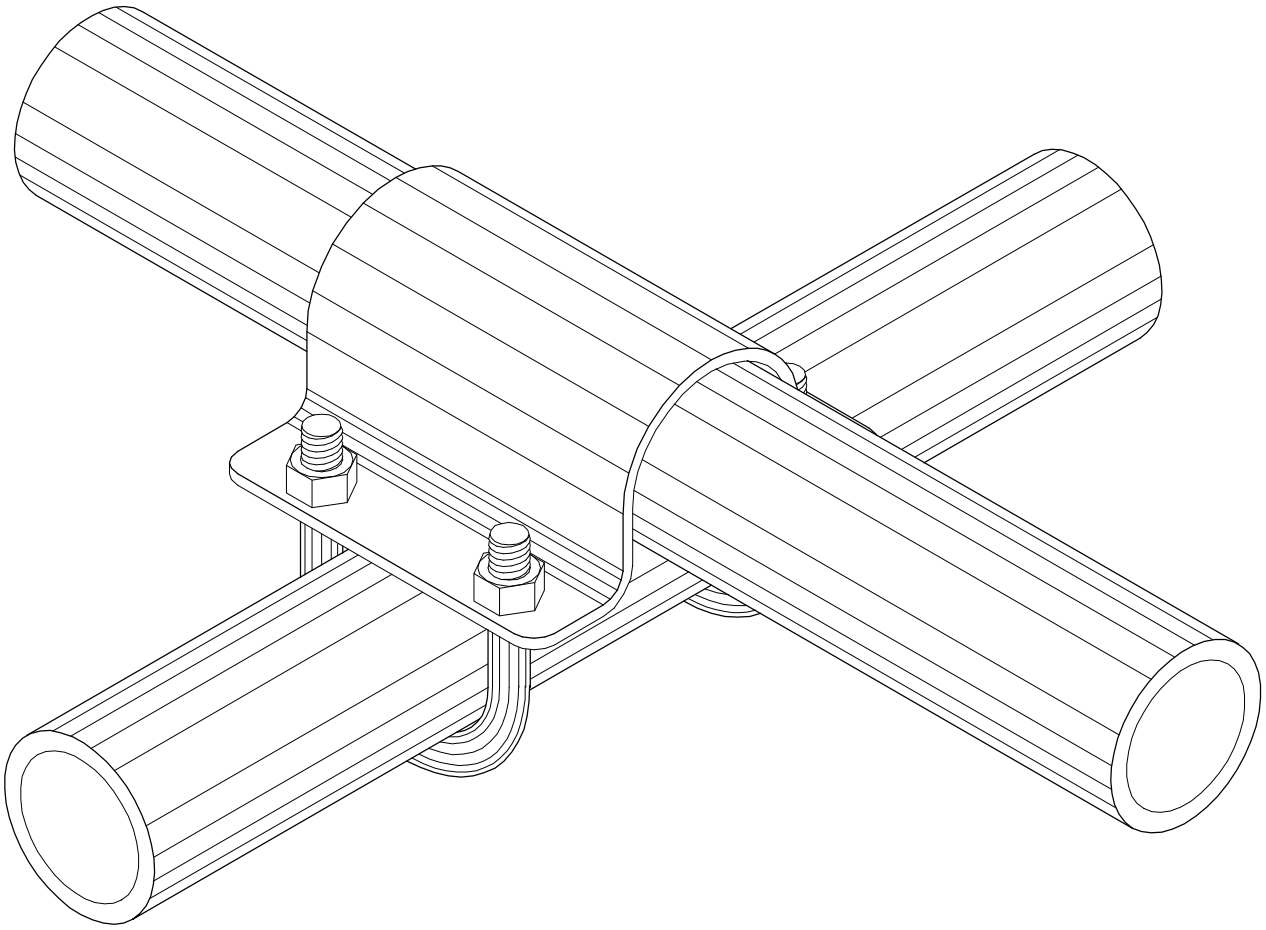


Specifications:

5" Ø Base with four (4) mounting holes 7/16" Ø
8" long telescopic tube to fit 1.5" sch 40 pipe
Field Drilling of pipe is required

Catalog # Grid Overlap

12 Gauge Steel Saddle, Black
Two (2) plated U-Bolts, 3/8" diameter
with 3/8" Heavy Hex Nuts



Specifications:

-01 1-1/2" pipe saddle with 1-1/2" pipe U-Bolts
-02 1-1/2" pipe saddle with 1-1/4" pipe U-Bolts
-03 1-1/2" pipe saddle with 2" Square Tube U-Bolts
-04 1-1/2" pipe saddle with Unistrut U-Bolts
-05 1-1/2" pipe saddle without U-Bolts